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UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS

IN RE: MASSACHUSETTS ASBESTOS CASES)
) CASE NO: M.B.L. No. 1
)

- - -

Deposition of WILLIS HAZARD, a witness herein, called by the Plaintiffs as if upon Examination under the Federal Rules of Civil Procedure, taken before me, the undersigned, Dianne Bochi, a Notary Public in and for the State of Ohio, at the Sheraton Westgage Hotel, 3536 Secor Road, Toledo, Ohio, on Tuesday, February 11, 1981, at ten o'clock a.m.

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DB:jb

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MAINE

LAWRENCE KIMBALL,	)	
Plaintiff,	)	Applicable to all
vs.	)	Maine Cases
JOHNS-MANVILLE CORPORATION, et al.,	)	No. 80-0180 A-P
Defendants.	)	

- - -

Deposition of WILLIS HAZARD, a witness herein, called by the Plaintiffs as if upon Examination under the Federal Rules of Civil Procedure, taken before me, the undersigned, Dianne Bochi, a Notary Public in and for the State of Ohio, at the Sheraton Westgate Hotel, 3536 Secor Road, Toledo, Ohio, on Tuesday, February 11, 1981, at ten o'clock a.m.

- - -

DB:jb

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MARYLAND

In re: Key Highway and
Sparrows Point Shipyards
Asbestos Cases

THOMAS L. BAUMANN, et al.,

Plaintiffs, K-79-2204

vs.

JOHNS-MANVILLE CORP., et al.,

Defendants.

FREDERICK O. LOHRMANN, et al.,

Plaintiffs, J-79-2203

vs.

JOHNS-MANVILLE CORP., et al.,

Defendants.

JOHN J. KENNY, et al.,

Plaintiffs, N-79-2205

vs.

JOHNS-MANVILLE CORP., et al.,

Defendants.

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a

HOWARD FRALEY, et al.,

Plaintiffs, J-80-2607

vs.

JOHNS-MANVILLE CORP., et al.,

Defendants.

LEO GAWOR, et al.,

Plaintiffs, K-80-2608

vs.

JOHNS-MANVILLE CORP., et al.,

Defendants.

EPHRAIM HARVARD, et al.,

Plaintiffs, Y-80-2609

vs.

JOHNS-MANVILLE CORP., et al.,

Defendants.

ALVIN PURCELL, et al.,

Plaintiffs, HM-80-2610

vs.

JOHNS-MANVILLE CORP., et al.,

Defendants.

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b

EUGENIA BUSKIRK, etc.,

Plaintiff, JH-80-2511

vs.

JOHNS-MANVILLE CORP., et al.,

Defendants.

MARIE NAGY, etc.,

Plaintiff, J-80-2612

vs.

JOHNS-MANVILLE CORP., et al.,

Defendants.

MARY PULLER, etc.,

Plaintiff, K-80-2613

vs.

JOHNS-MANVILLE CORP., et al.,

Defendants.

VIRGINIA TOBOLL, etc.,

Plaintiff, Y-80-2614

vs.

JOHNS-MANVILLE CORP., et al.,

Defendants.

RAYMOND DAVIS, et al.,

Plaintiffs, HM-80-2615

vs.

JOHNS-MANVILLE CORP., et al.,

Defendants.

CLARENCE BROOKS, et al.,

Plaintiffs, JH-80-2616

vs.

JOHNS-MANVILLE CORP., et al.,

Defendants.

JAMES JONES, et al.,

Plaintiffs, JH-80-2606

vs.

JOHNS-MANVILLE CORP., et al.,

Defendants.

- - -

Deposition of WILLIS HAZARD, a witness herein, called by the Plaintiffs as if upon Examination under the Federal Rules of Civil

Procedure, taken before me, the undersigned, Dianne Bochi, a Notary Public in and for the State of Ohio, at the Sheraton Westgate Hotel, 3536 Secor Road, Toledo, Ohio, on Tuesday, February 11, 1981, at ten o'clock a.m.

- - -

DB:jb

COMMONWEALTH OF PENNSYLVANIA
1ST JUDICIAL DISTRICT
COURT OF COMMON PLEAS
COUNTY OF PHILADELPHIA

FRANCIS HOGERTY,	)	
Plaintiff,	)	
vs.	)	CASE NO. 43221 CASE NO. 1
JOHNS-MANVILLE CORPORATION, et al.,	)	ASBESTOS CASE
Defendants.	)	

- - -

Deposition of WILLIS HAZARD, a witness herein, called by the Plaintiffs as if upon Examination under the Pennsylvania Rules of Civil Procedure, taken before me, the undersigned, Dianne Bochi, a Notary Public in and for the State of Ohio, at the Sheraton Westgate Hotel, 3536 Secor Road, Toledo, Ohio, on Tuesday, February 11, 1981, at ten o'clock a.m.

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APPEARANCES:

On behalf of the Plaintiffs:

KREINDLER & KREINDLER:
Stanley J. Levy
Ivan B. Rubin

On behalf of Defendant Owens-Illinois, Inc.:

McCARTER & ENGLISH:
Andrew Berry

On behalf of Defendant Owens-Corning Fiberglas Corporation:

KRUSEN, EVANS & BYRNE:
John P. Kelley

Joseph A. Stancoti, House Counsel

PARKER, COULTER, DALEY & WHITE:
Arthur F. Licata

On behalf of Johns-Manville Corporation:

SEMMES, BOWEN & SEMMES:
Bruce R. Parker

STITES, McELWAIN & FOWLER:
Thomas C. Hundley

On behalf of Defendant Pittsburgh Corning Corporation:

HERMANN, CAHN & SCHNEIDER:
Philip J. Hermann

On behalf of Defendat UNARCO Industries:

DETWEILER, HUGHES & KOKONOS:
Michael Cannon

On behalf of Defendants Keene Corporation, Armstrong Cork Company, Cumming Insulation, Forty-Eight

APPEARANCES (Cont'd.):

Insulations, Westinghouse, J. P. Stevens, Eagle-Pichel (not included in Philadelphia case):

Jan A. Saurman

On behalf of Defendants GAF Corporation and Rubberoid Company, Inc.:

BAKER & HASTETTLER:
Kris Kostolansky

On behalf of Defendant Raybestos-Manhattan:

HESSER, ARMSTRONG, TOOMEY & DISANTIS:
William E. Blackie, III

On behalf of Fibreboard (not included in Maryland case):

CRONQUIST, SMITH, MARSHALL & KAGELS:
Timothy E. McMonagle

On behalf of Celotex Corporation (included in Maryland case only):

WRIGHT & PARKS:
H. Emslie Parks

On behalf of Defendant Pacor, Inc. (included in Philadelphia case only):

RAWLE & HENDERSON:
Kevin F. Berry

On behalf of Third-Party Defendant U. S. Government (included in Maine and Massachusetts cases only):

Marianne B. Bowler, Assistant U. S. Attorney

On behalf of the witness, Willis Hazard:

SECOR, IDE & CALLAHAN:
John J. Callahan

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I N D E X

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(Whereupon, Hazard Exhibits 1 through 19 were marked for identification.)

MR. LEVY: Just some background and then we can put on the record the stipulations. The depositions have been noticed by our firm in all cases pending in which we represent the Plaintiffs in Maryland, Maine, Massachusetts, and Philadelphia.

As you know, there were protective orders filed by Mr. Callahan on behalf of both Mr. Hazard and Mr. Ames. Our understanding, based on conversation with the judge's law clerk, was that the motion with regard to Mr. Hazard was granted and the provisions of the protective order, obviously, would therefore apply. Our further understanding is that the motion with regard to Mr. Ames was denied in its entirety with a request from the judge that he hoped that the parties would afford Mr. Ames the same type of courtesy and consideration as was applied to Mr. Hazard by way of the protective order.

Prior to the commencement of the

deposition, we have had some discussion between myself and counsel for Owens-Illinois; to a lesser extent, counsel for Owens-Corning, in the hope of expediting the deposition by resolving or facilitating the marking and introduction of exhibits. I have asked the Reporter and the Reporter has premarked some 19 exhibits which I intend to use during the course of Mr. Hazard's deposition, and these have been marked sequentially.

My understanding is that counsel for Owens-Illinois intends to offer some additional documents, and in order to facilitate the use of those, because the ones I had marked are in chronological order, we have agreed that the Owens-Illinois documents would be marked with the same chronological sequence, but where there is a gap, say if my last document was January 1st of 1944, and the next one is January 1st of 1945, and Owens-Illinois intends to produce documents in that time frame, that the documents will be marked with the same number as the January, 1944 document and then

lettered so that it will be possible for anybody to keep the documents in sequence and yet at the same time immediately be able to determine whether they were introduced by plaintiff or by somebody else such as Owens-Illinois. I believe that they will also be premarked to facilitate and speed up the deposition.

Also based on the discussion, it's my understanding that the following stipulations will apply to these depositions in all the jurisdictions. First is that all objections as to form will be preserved. The second is that if there are objections as to form by anybody they will be applicable to all other parties attending. Our understanding further is that the deposition will be signed by the witness, and that the signature will be in quadruplicate so there will be an original signature for each of the four jurisdictions.

Further, it is our intention to file the depositions once they have been signed, or if they're not signed, after the time limit

specified by the Federal Rules. Our understanding is that the witness may sign before any notary public.

Further, it is agreed that the exhibits that have been marked will be turned over to the Court Reporter and that a complete set of exhibits will be attached to and made a part of the depositions.

Furthermore, everybody, I believe, understands that the question of the admissibility of the documents is something that will be reserved until the time of trial unless everybody decides that they want to agree now to the admissibility; but absent such an agreement, that's reserved.

Now, does that essentially state the understanding of everyone? Have I missed anything or misstated anything?

MR. KELLEY: Could you identify the documents before this deposition starts?

MR. LEVY: You want to go through it, Jack?

MR. KELLEY: I believe you said you

intend to use 19 documents.

MR. LEVY: Yes.

MR. KELLEY: If you could just read off the titles of those documents with their number, I would appreciate it so we could get those documents from our file.

MR. LEVY: Hazard Exhibit 1 is a document dated February 12, 1943, addressed to Dr. L. U. Gardner on the letterhead of Owens-Illinois Glass Company and signed by U. E. Bowes, Director of Research. It consists of two pages.

Hazard Exhibit 2 is a letter dated February 23, 1943, addressed to Mr. U. E. Bowes, Director of Research, Owens-Illinois Glass Company, two-page document, with a signature block of Leroy U. Gardner, M.D., Director.

Exhibit No. 3 is a one-page document addressed to Mr. U. E. Bowes, Director of Research, Owens-Illinois Glass Company, dated March 12, 1943, and a signature block of Leroy U. Gardner, M.D., Director.

Exhibit No. 4 is a letter dated May 31,

1944, addressed to Mr. U. E. Bowes, Director of Research, Owens-Illinois Glass Company, Re: Hydrous Calcium Silicate Animal Experiments, with a signature block of Leroy U. Gardner, M.D., Director.

Hazard Exhibit No. 5 is a letter dated November 21, 1944, addressed to Dr. Leroy U. Gardner, signed U. E. Bowes, Director of Research.

Hazard Exhibit No. 6 is a document dated October 30, 1947, entitled Owens-Illinois Glass Company, Toledo, Ohio, Interim Report on Animal Inhalation Experiments with Kaylo. It's a multi-page document.

Hazard Exhibit No. 7 is a letter on the Owens-Illinois Glass Company letterhead dated September 21, 1948, addressed to Dr. A. J. Vorwald, Saranac Laboratory, signed by W. G. Hazard, Industrial Relations Division.

Hazard Exhibit No. 8 is a document entitled Interim Report Regarding the Biological Activity of Kaylo Dust to the Owens-Illinois Glass Company, Toledo, Ohio, by The Saranac

Laboratory, dated October 30, 1948.

Hazard Exhibit No. 9 is a letter dated November 16, 1948, to Mr. U. E. Bowes, Owens-Illinois Glass Company, on the signature block of Arthur J. Vorwald, M.D., Director, consisting of three pages.

Hazard Exhibit No. 10 is a multi-page document entitled Interim Report Regarding the Biological Activity of Kaylo Dust to the Owens-Illinois Glass Company, by The Saranac Laboratory, dated April 30, 1949.

Hazard Exhibit 11 is entitled Interim Report Regarding the Biological Activity of Kaylo Dust, and this one is dated January 1, 1950.

Apparently, I marked the same document twice as Exhibits 12 and 13 dated June 1st, 1950, addressed to W. G. Hazard, Industrial Relations Division and a signature block of Arthur J. Vorwald, M.D., Director.

Exhibit 14 is a letter dated December 12, 1950, to Dr. Arthur J. Vorwald from Mr. W. G. Hazard, the Industrial Relations Division, one page.

Hazard Exhibit 15 is a document entitled Final Report, Investigation Concerning the Capacity of Inhaled Kaylo Dust to Injure the Lung to the Owens-Illinois Glass Company by The Saranac Laboratory dated January 30, 1952.

Hazard Exhibit No. 16 is a letter dated February 7, 1952, addressed to Mr. W. G. Hazard on a signature block of Arthur J. Vorwald, M.D., Director.

Hazard Exhibit 17 is an intercompany correspondence on the letterhead of Owens-Illinois Glass Company dated November 21, 1952, Attention of Mr. P. A. Gillis-Berlin from W. G. Hazard.

Hazard Exhibit No. 18 is another intra-company correspondence on the Owens-Illinois letterhead dated October 5, 1955, Attention Mr. M. M. Olander, and appears to be from Mr. Hazard.

And Exhibit 19 is a letter dated September 8, 1941, addressed to Mr. W. G. Hazard, Owens-Illinois Glass Company, on a signature block, Owens-Corning Fiberglas Corporation, Legal and

Patent Department. On the lefthand side there is a name C. G. Staelin.

One other document which I am going to ask the reporter to mark will be a Reprint No. 1665, Public Health Service monograph entitled Effects of the Inhalation of Asbestos Dust on the Lungs of Asbestos Workers.

(Whereupon, Hazard Exhibit 20 was marked for identification.)

Are there any other preliminaries that we should take up before Mr. Hazard is sworn?

MR. PARKS: For the purposes of the record my name is H. Emslie Parks. I want to make it clear I am here today representing Celotex Corporation and will be the only attorney appearing for the Celotex Corporation, but I want the record to also reflect that I am not entering my appearance in any case other than the Maryland cases.

MR. KEVIN BERRY: I am entering my appearance for Pacor, Inc. in the Philadelphia cases only.

MR. KELLEY: That is true also for

John P. Kelley of Philadelphia, Owens-Corning Fiberglas Corporation.

MR. CALLAHAN: Have counsel agreed as to the batting order?

MR. LEVY: The understanding, Mr. Callahan, we are going to start on your left and just go around the table unless anybody feels differently.

MR. KELLEY: For the record, I am also advised I am representing Owens-Corning for the other jurisdictions in this deposition.

MR. CALLAHAN: May I present Mr. William Hazard.

WILLIS HAZARD,

was by me first duly sworn, as hereinafter certified, deposed and said as follows:

MR. CALLAHAN: May we agree, Ms. Bowler and gentlemen, that the time is 10:30 and that the first hour of the deposition would be recessed at approximately 11:20 for a break.

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EXAMINATION

BY MR. LEVY:

Q. Mr. Hazard, my name is Stanley Levy. I represent a number of Plaintiffs in asbestos litigation in various jurisdictions in the northeast.

I will be, at least initially, questioning you during the deposition. If during the course of the deposition in my questioning, at any time you feel that you would like to take a break, if you would let me know, there would be no problem, sir. Also, if at any time you have trouble understanding any of my questions, if you would just indicate that, and I will try to correct the question to change it, make sure that there is no problem of understanding between the two of us, all right, sir?

A. Thank you. May I just make a minor correction. My name is Willis, W-i-l-l-i-s, rather than William.

Q. Mr. Hazard, would you state for us your full name, address, and your date of birth.

A. My name is Willis G. Hazard, 3609 Mapleway Drive, Toledo, Ohio, 43614. My date of birth is April 27, 1907.

Q. Could you trace for me, sir, your educational background?

A. I went to college at Harvard, and I attended the Graduate School at Harvard where I studied physics and received an A.M.

Q. And when was that, sir? When did you graduate from Harvard?

A. 1929.

Q. And after graduation and receiving your A.M. degree, did you immediately begin working?

A. Yes.

Q. Could you trace for me your employment history up until the time that you became associated with Owens-Illinois?

A. In the mid-1930's I was appointed an instructor in the Harvard School of Public Health. The purpose of my being there was to work on a machine or device, an instrument, for recording the amount of dust in the air of industrial plants. This used certain principles of physics, and it was because I had studied physics that I got this job. I was there from 1930 to 1934.

Q. During that time did you also do any teaching?

A. I did teaching in the last year and a half in

industrial hygiene.

Q Did the machine that you were working with have some name?

A We called it a dust recorder. It was the subject of two patents, and it was written up in the Journal of the Franklin Institute of Philadelphia which is a technical journal.

Q During the time you were at Harvard, did you take any courses or do any studying in the area of industrial health?

A No, sir. I beg your pardon, you mean when I was an undergraduate or a graduate?

Q During the period of 1930 to 1934 while you were an instructor.

A I see. I had the wrong period. I sat in on some courses at the School of Public Health, mostly in industrial hygiene.

Q And after you left Harvard in 1934, what did you do?

A I came to work for Owens-Illinois Glass Company in Toledo, Ohio.

Q And for how long did you continue to work for Owens-Illinois?

A. Until 1974.

Q. And was that forty years uninterrupted by leaves of absence or other jobs?

A. No. From 1942 to '46 I was in the Public Health Service of the United States during the war years which was a militarized service. They had a Department of Industrial Hygiene because of the many war plants that were operating then, and I was assigned to the State of New Jersey where there was much wartime manufacturing activity.

Q. During the time you were with the Public Health Service, did you specialize in any particular type of a job or any particular type of plants?

A. It was mostly in plants where there was some exposure to dust, but the dusts, gasses, fumes, vapors were all involved.

Q. Did you have any responsibility for any of the asbestos manufacturing plants in New Jersey?

A. No direct responsibility, and I can't recall if I visited any of them or not because I was in a wide variety of manufacturing operations.

Q. When you joined Owens-Illinois in 1934, what was your job title and what were your responsibilities?

A. I was located in the Personnel Division of the corporation, and I was simply an industrial hygienist.

Q. How many industrial hygienists were there at that time?

A. I was the only one.

Q. And to whom did you report?

A. Well, I've got to think back. When I first came to Toledo in 1934, the Legal Department of the corporation had what they called a silicosis committee on which was a lawyer, a director of the Workmen's Compensation Insurance Department, and a person associated with the Real Estate Department. Well, there was sort of a screwy setup, and it didn't last very long, a matter of a few months, and then I reported to the Personnel Director of the corporation who was Mr. M. M. Olander.

Q. And when you joined the company in 1934, what duties did you have? What was the purpose of your job?

A. My first duties were to visit the three sand plants that the corporation had which supplied the glass-making operation with sand to see how dusty they were, and then after those trips were made and recommendations for improvements were made, I visited what

they call the batch plants of the Glass Container Manufacturing Division to see how dusty the batch houses were.

Q. How long did you continue to serve as an industrial hygienist in the Personnel Division?

A. Directly in the Personnel Division it was 1934 to 1943, '42.

Q. Until you left to go to the Public Health Service?

A. And then 1946 to the time I retired.

Q. During the period up until 1942, did you continue to report to Mr. Olander, or was there some change in reporting structure?

A. No, I continued to report to him.

Q. During this same period from 1934 to 1942, did you become involved in any way with the development of Kaylo by Owens-Illinois?

A. The initial work on Kaylo was done while I was away from Toledo in the Public Health Service, but I knew that the product was being developed even though I wasn't actively engaged in it or even in observing it. But when I got out of the Public Health Service, then I undertook to learn what Kaylo was all about.

Q But just so we have some time frames, up until the time that you left to go to the Public Health Service, you did not participate in any way in the development or in any aspect of the development of Kaylo?

A No, I don't recall that I did in any way.

Q Did you know that work was going on to develop a calcium silicate product containing asbestos during that period of time?

A I knew that after 1942. I didn't know it in the period you mentioned, '34 to '42.

Q So you learned about it some time while you were serving in the Public Health Service?

A Yes, sir.

Q Up until the time that you returned to Owens-Illinois in 1946 after your service in the Public Health Service, did you have any responsibility, or did you do anything at all in connection with asbestos, asbestos products, or surveying plants that manufactured or used asbestos?

A You said '42 to '46?

Q Up until the time you went back to Owens-Illinois in 1946.

A I don't recall that I had any direct connection

with any plant producing asbestos products during that period.

Q. Did you, prior to returning to Owens-Illinois in 1946, become familiar in any way with the health problems associated with the use of asbestos and asbestos products?

A. I knew the health problems connected with asbestos because of my general background in industrial hygiene and availability of reference work and things of that sort.

Q. And would you tell us, Mr. Hazard, what your understanding was, if you can recall back to that time, as to what the health hazards associated with asbestos products were?

A. It was thought that breathing asbestos dust over a period of many years caused a change in the tissue of the lung where oxygen is exchanged with the blood. It caused sort of a thickening of the tissue which is demonstrable on chest x-rays. It led consequently to an increasing shortness of breath. There was no pain. There was no infection. There was no demonstrable changes except for shortness of breath, often mild, sometimes advanced. For example, when a

person ran upstairs, and on the x-ray there was a change.

Q Had you reviewed any of the medical literature that had been published in respective medical and industrial health articles and journals during the period prior to 1946 dealing with asbestos and health?

A Yes, I had.

Q And did you feel that as part of your duties that you had a responsibility to keep abreast of what was going on in the health aspects of industrial hygiene?

A Yes. I felt that I should keep abreast of the general field of industrial hygiene which would include asbestos.

Q And you were attempting to do that?

A Yes. Asbestos, however, was quite different from a silicate, silicosis. The danger with silicosis is that a person gets pulmonary tuberculosis, progresses fast, and is very fast. As with asbestos, asbestos there is no likelihood of getting an infection of anything or anything like TB.

Q Before you left Owens-Illinois in 1942 to go to the Public Health Service, did you have any contact or any dealings with the Trudeau Foundation at Saranac Lake?

A. As I recall it, I did because they had what they called Saranac Symposium in the late 30's. It seems to me it was in the two or three successive years where persons from all over the country who were involved in this field of dust gathered to be brought up to date and to pool their experiences. So I did know of the symposium or the two or three that were conducted before 1942.

Q. Again, prior to 1942, using that as a cutoff date, were you aware of any studies that were being conducted by Saranac for Owens-Illinois?

A. I don't believe so prior to 1942.

Q. Let me digress for a minute, Mr. Hazard. Do you have any personal files that you brought with you in response to the subpoena that was served on you?

A. Today?

Q. Yes.

A. No, sir.

Q. Do you have any personal files dealing with the period of time that you were with Owens-Illinois or dealing with Kaylo and with the asbestos and health problems that are your own?

MR. CALLAHAN: In response to the

subpoena, are you asking?

MR. LEVY: Yes.

MR. CALLAHAN: Yes, we have some papers.

MR. LEVY: And they are here?

MR. CALLAHAN: Yes.

MR. LEVY: Maybe during the break I will take a look at them.

Q. Mr. Callahan then would have everything that you have been able to find in response to the subpoena that was served?

A. Yes, that's right.

Q. Prior to the deposition today, have you given testimony in any other asbestos-related cases by way of deposition or by way of appearance at a trial?

A. No, sir, I have not.

Q. In preparation for the deposition today, have you met with anybody other than Mr. Callahan?

A. Yes.

Q. Could you tell us, sir, who you met with?

A. You are speaking of preparation for this deposition today?

Q. I am going to break it down. I am going to

ask you to go beyond that later. But just in terms of preparing for today's deposition, have you met with anybody else?

A. This gentleman two down from you I have met with.

MR. ANDREW BERRY: Andrew Berry.

Q. Anyone else besides Mr. Berry and Mr. Callahan?

A. I don't know just how to answer that because on certain occasions another attorney would be present. None of them was directly involved in my appearance here, but they were in the room on occasion, and I was introduced to them.

Q. They did not participate in discussing with you what was likely to occur today?

A. I don't think they did. This thing has been going on, you know, for two years.

Q. Not with me. Have you reviewed any documents or files in preparing for the deposition today?

A. Yes. I have reviewed files and documents.

Q. Could you take a look at these, Mr. Hazard, and would you tell me if these are among the documents that you have reviewed? These are the exhibits which have been marked.

A. Exhibit No. 1 I reviewed before today in preparation for this. Exhibit No. 2 I have reviewed, and No. 3. These four exhibits I did not receive a copy of, but I am reasonably sure that Mr. Bowes showed me his file, but I can't remember the date or the time or anything else, but I am pretty sure I saw them.

Q. Mr. Bowes was the Director of Research for Owens-Illinois?

A. Yes, sir. In the same way, I am sure I reviewed No. 5. No. 6 is an Interim Report of Saranac Laboratory, their animal experiment on Kaylo, and I'm sure that I saw that too.

Q. Mr. Hazard, there are really two questions I am going to ask you. The first is whether you have seen them in preparation for the deposition today, and the second will really relate to whether they were company documents and whether you saw them in the course of your working. But in going through them now, would you just indicate whether you saw them within the last few days in preparation for the deposition?

A. I don't believe I saw them in the last few days. I don't think I had my file in those last few days.

Q Have you seen them, say, in the last four or five or six months?

A Oh, I believe so.

Q Let me ask the question this way: In going through the exhibits, would you just tell us if you've seen these documents, say, within the last three or four months?

A I believe so.

Q Why don't you finish taking a look at them just to make sure because I haven't looked through all of them yet.

A Exhibit 7, you know, this is hard because I'm sure I have seen all of these, but some of this daily correspondence stuff I don't know that I saw them three or four months ago. I may have seen them 12 or 18 months ago, but not three or four.

Q Let's take your time frame within the last year, 18 months. During the last year or two years, you have been asked at various times to review documents and to discuss with people from Owens-Corning and Owens-Illinois your activities while you were working for Owens-Illinois, haven't you?

A Yes, I can say that's true.

Q. And at various times you have been shown documents which you had an opportunity to review and to look through?

A. Yes.

Q. In the context of these various sessions where you've had the opportunity to review the documents, what I would like you to do is just to let me know whether these documents are among the ones that you have had an opportunity to look through.

A. Well, there is a series of interim reports here and I am sure that I looked at those.

Q. You are referring to the interim reports from Saranac?

A. Yes. I'm sure I looked at those, and I think I must have looked at most all the correspondence too some time in the last year.

Q. Well, would you take a minute, because I would rather you be sure. Look through all of them just so you are familiar with all of them then and maybe I can ask you a general question and try to do it quickly.

A. Seventeen and 19, I don't know whether I reviewed those in the last year or not.

Q. Leaving aside Exhibits 17 and 19 for a minute,

all the others you've had an opportunity to review within the last 18 months or so?

A. Yes, that's right.

Q. And based on looking through them now and the opportunity that you've had in the past to review them, were they all documents which you saw during the time that you were working for Owens-Illinois?

A. Yes.

Q. And were they documents that were either received by Owens-Illinois or sent by Owens-Illinois in the regular course of its business?

A. Yes, I would say so.

Q. And they were ones that under the normal course of procedures for Owens-Illinois would have been kept and maintained by the company in the regular course of its business?

A. Yes.

Q. Now, if we take 17 and 19, which you say you haven't seen, you don't recall having seen in the last 18 months. If you look at those two, are they also documents that were received or kept or transmitted by Owens-Illinois during the time that you were employed by the company?

A. Yeah.

Q. They also would have been documents that were prepared, maintained, and kept in the regular course of business by Owens-Illinois?

A. Yes.

Q. I omitted to ask you, Mr. Hazard, have you ever written or published any materials dealing with industrial relations or health?

A. Yes.

Q. Have any of them dealt with Kaylo or the health aspects of asbestos?

A. I don't think any of them dealt with the health aspects of asbestos, but some might have dealt with Kaylo.

Q. Mr. Hazard, we've used the expression Kaylo. Could you tell us what Kaylo is?

A. Chemically Kaylo was a hydrous calcium silicate. It was an artificial compound; that is, it was not mined. It was made in two of our plants; one in Berlin, New Jersey, and one in Sayreville, New Jersey. It was used first as a pipe covering insulating material, thermal insulation. Later it was used as a ceiling tile such as you would put on the flat ceiling for

decorative purposes or for insulation too.

Q And was it made in both a molded pipe covering form and as a block?

A Yes.

Q And it contained asbestos?

A Yes. Fifteen percent, roughly.

Q And what was the purpose of the asbestos in the Kaylo; do you know, sir?

A It gave it strength. It kept it from crumbling or cracking. It was a reinforcing material.

Q When you returned to Owens-Illinois in 1946, had Kaylo already been developed?

A Yes, it had.

Q Had it already been marketed by that time?

A That I don't know.

Q In the corporate structure that existed in 1946, was there a department or division that was responsible for the sale or development and handling of the Kaylo product?

A Yes, there was a division known as the Structural Products Division, I think it was, which handled Kaylo for a while, and the company also made glass block for building construction use in Muncie,

Indiana, and that was in this Structural Products Division, as I remember.

Q But the Kaylo was manufactured only in Sayreville and Berlin?

A Yes.

Q At that time was the product developed with the understanding that it was to be used or would be used in the insulation work?

A That was, I think, the original purpose of it, thermal insulation.

Q And was it recognized that it would be used aboard ships?

A Yes.

Q Did you personally participate in any testing in connection with the development of Kaylo?

A Such as product testing?

Q Such as if there were any compression tests or bending tests or thermal tests or tests to determine the dust release characteristics of the product; any tests along those lines during the development phase of Kaylo?

A I don't remember participating in any such tests, but I did make tests in each plant to see how

much dust there was in the air, which had nothing to do with the product, really.

Q. At both Sayreville and Berlin?

A. Yes, sir.

Q. When was the first time that you did, what should we call these, dust collection tests or dust monitoring tests?

A. Yes. It would be during 1946 because I wasn't with the company until mid-1946.

Q. It would have been relatively soon after you returned to the company?

A. Yes. I don't know how soon, but it certainly wouldn't be before that.

Q. When you returned in 1946, what title did you have?

A. I was a member of the Personnel Division. I didn't have a title. Well, my field was industrial hygiene, but it wasn't a title as such.

Q. Were your duties and responsibilities the same as you had before you left, or were they different in any way?

A. They were essentially the same. They were expanded and much the same because the company had

96

expanded.

Q Were there any other industrial hygienists in 1946 other than yourself?

A With Owens-Illinois?

Q Yes.

A No.

Q When you returned in 1946, were you still reporting to Mr. Olander, or had there been a change in reporting structure?

A No, I think I was still reporting to Mr. Olander.

Q And you were still within the Personnel Department?

A Yes, sir.

Q Could you just briefly trace for me your job progression in terms of title changes or responsibility changes from 1946 until you retired in 1974?

A There was very little change in title. There was expansing of duties all within the field of industrial hygiene. We got interested in other aspects of the working environment such as the heat and noise, all forms of air pollutants. And the Personnel Division at one point was named the Industrial Relations Division, and the last two years, I think it was, I was

transferred from the Industrial Relations Division or the Personnel Division, whichever it was known as, to the Owens-Illinois Technical Center on Westwood Avenue.

Q In Toledo?

A In Toledo where they had the department that was concerned with outdoor pollution, water pollution, and air pollution. The thing was, I guess, that it would be logical to combine the pollution activities for in-plant and out-plant as regards air pollution.

As I have said several times, my big problem was originally dust inside the plant and then gasses, fumes, and vapors that might be of health significance. I think they thought that this work should be combined with outdoor air pollution, and that was the reason they moved me to the Tech Center.

Q During the time from 1946 until you retired, did you do any work with regard to changing the composition of Kaylo, modifying the product, or anything with regard to elimination of asbestos from Kaylo?

A I did no work like that myself.

Q You would not have been involved in the product change or product improvement end of the work?

A Not directly.

Q Did you have any input, make any recommendations or suggestions for changes in the product?

A Well, there was talk of replacing asbestos with glass fiber, fiberglas, but that was out of my field.

Q When did that kind of talk develop?

A I suppose in the early 50's. I really don't know. I wasn't directly involved. I knew that there was an effort made to make the substitution, and of course I was in favor of that because fiberglas is harmless and asbestos is not.

Q As long as Owens-Illinois continued to manufacture Kaylo, though, it continued to use asbestos; is that correct?

A I believe that's correct.

MR. LEVY: I'm going to go into a different area. Do you want to take a break because I would rather not start and then just stop.

(Whereupon, a recess was held from 11:15 to 11:30.)

Q Mr. Hazard, did there come a time after you returned to Owens-Illinois in 1946 when you learned

that Owens-Illinois had entered into an agreement with The Saranac Laboratory to examine the health risks associated with Kaylo?

A. Yes.

Q. Could you tell us, sir, how you came to learn of the agreement with Saranac?

A. I think it was by reading correspondence, a copy of which is right here, between the director of The Saranac Laboratory and Mr. Bowes who was our Director of Research in Owens-Illinois.

Q. Could you tell me, sir, by reference to the exhibits which one you are referring to when you pointed to the group of exhibits?

A. Exhibits No. 1 and 2.

Q. And that's the letter from Mr. Bowes to Dr. Gardner at Saranac dated February 12, 1943, setting up the type of experiments and program; and Dr. Gardner's response dated February 23, 1943?

38

A. Yes.

Q. Was there a file that you were able to review when you returned in 1946 that contained the information, correspondence, dealing with the Saranac study?

A. I don't know.

Q Did you have discussions with Mr. Bowes about the work that was being done at Saranac?

A Yes.

Q And could you tell us, sir, what you were told about the Saranac study by Mr. Bowes when you returned?

A I don't remember what I was told. I did read the file.

Q Was Exhibit 3, the letter of March 12th, also in the file?

A What did you ask me?

Q When you went through the file, do you remember reviewing this letter of March 12, 1943, from Dr. Gardner to Mr. Bowes?

A I don't remember.

Q You just don't remember one way or the other?

A No.

Q Did you get yourself a copy of Mr. Bowes' file or did you just refer to his whenever you had a question?

A I referred to his.

Q After you returned in 1946, did you have some duties or responsibilities with regard to the Saranac study, the study of Kaylo?

A. After I returned I became familiar with it, but the study had already been established.

Q. And did you receive copies of the various interim reports that have been marked as exhibits and get an opportunity to review them as they came in?

A. I had an opportunity to review them as they came in. I don't know the answer to your first part.

Q. But you did review them?

A. Yes.

Q. And did you also review the letters that were sent by Dr. Vorwald in connection with the study; such as the November 16, 1948, letter which was marked as Exhibit 9?

A. I don't know.

Q. In the November 16, 1948, letter, Exhibit 9, Mr. Hazard, Dr. Vorwald states in the third full paragraph: "During the 30 to 36 month period, however, definite indication of tissue reaction appeared in the lungs of animals inhaling Kaylo dust and therefore, I regret to say, our tentative conclusion quoted above must be altered. In all animals sacrificed after more than 30 months of exposure to Kaylo dust unmistakable evidence of asbestosis has developed, showing that Kaylo

on inhalation is capable of producing asbestosis and must be regarded as a potentially hazardous material." Did you learn of that conclusion by Dr. Vorwald some time in or around November 1948?

A. Yes, I did.

Q. And in the same letter, Dr. Vorwald makes a suggestion about a safety program. Do you know whether anything was done by Owens-Illinois at that time with regard to developing a safety program dealing with the sale and marketing of Kaylo?

A. Where is that suggestion?

Q. The last paragraph says, "As these findings have not yet been released for publication, I request that, while using them as required in formulating a safety program, you regard them as confidential." I'm sorry, the last paragraph on page 1.

A. Yes, I see what you mean.

Q. Did Owens-Illinois undertake any safety program at that time with regard to the users of Kaylo?

A. I don't know.

Q. Was there any discussion at that time by Owens-Illinois to eliminate asbestos from Kaylo?

A. No, I don't think there was. I mentioned

earlier that I had in mind in our batch house where raw asbestos was handled not in the product.

Q In terms of potential --

MR. KELLEY: I would object and ask that the witness be permitted to continue with the answer which he was interrupted in giving.

A Well, I had in mind the control of asbestos dust in the batch house of our batch house where raw asbestos is weighed and mixed, not in the finished product.

Q Following Dr. Vorwald's letter in November of 1948, did Owens-Illinois do anything to eliminate asbestos from Kaylo?

A No, I don't think so.

Q Following Dr. Vorwald's letter in November of 1948, did Owens-Illinois issue any warnings to customers or users of Kaylo?

A No.

Q If you would look at the letter of June 1st, 1950, which has been marked as Exhibit 12 and 13. Do you have that, sir?

In June of 1950 or within a few months of

receipt of Dr. Vorwald's letter to you dated June 1st, 1950, do you know whether Owens-Illinois conducted any studies or made any effort at that time to remove asbestos from Kaylo?

A No, I don't know.

Q You don't know of any?

A No.

Q Did Owens-Illinois at that time issue any warnings to customers or to users of Kaylo concerning the dangers of asbestos as contained in the Kaylo product?

A No, we did not. There was no danger to the user.

Q Did you issue any warning to any of the users?

A No, there was no reason to.

Q Well, whether you believe there was or there wasn't, after you received Dr. Vorwald's report, you did not issue any warning, did you?

A No.

Q Now, if you would refer to the letter of February 7, 1952, transmitting the final report, and in the letter Dr. Vorwald states in the second paragraph: "The results of the investigations with animals

show that Kaylo dust is capable of producing a peri-bronchiolar fibrosis typical of asbestosis." Did you see that, sir?

A Yes.

Q And you received this letter, didn't you?

A Yes.

Q Now, at any time in February of 1952 or after you received Dr. Vorwald's letter and the final report, did Owens-Illinois undertake any program to eliminate asbestos from Kaylo?

A I don't know.

Q You don't know of any?

A No.

Q Did Owens-Illinois at that time in 1952 issue any warnings to customers or users of Kaylo concerning the additives of asbestos?

A No.

Q At any time prior to the sale of the Kaylo line to Owens-Corning, did Owens-Illinois ever issue any warnings to users or customers of Kaylo concerning the dangers of asbestos?

A No.

Q Did you during the period from 1948 to 1952

when you received the letters from Dr. Vorwald and the studies, both the interim and the final studies, pass those studies along to Mr. Bowes?

A Would you repeat that, please?

Q Yes. Did you pass along to Mr. Bowes the results of the studies, the interim and the final studies, conducted by Saranac as well as Dr. Vorwald's letters to Mr. Bowes?

A I don't know.

Q You have no recollection of having done that?

A No.

Q Do you have a recollection of passing along the actual documents, the Vorwald letters, and the reports to any of the people at the Berlin Plant or at the Sayreville Plant?

A I have no recollection of that.

Q Did you ever discuss the studies and the letters from Dr. Vorwald with Dr. Shook?

A I think I did, but I'm not sure when Dr. Shook came as our Medical Director. I don't have the date right in mind.

Q What is your best recollection, say, within six months or so?

A. 1947, something like that, I think.

Q. You have no recollection of whether the studies were passed along to Dr. Shook to read and review?

A. I have no recollection of that.

Q. Other than you and Dr. Shook, was there anybody else at Owens-Illinois who was in the general area of medical and industrial hygiene?

A. Nobody in industrial hygiene and nobody directly in industrial medicine except Dr. Shook.

Q. By the way, this time period in the late 40's, early 50's, did Owens-Illinois have a medical library?

A. Dr. Shook had some volumes of medical journals, if that's what you mean. There was no big library.

Q. You continued, did you not, the practice you described earlier of trying to keep up to date with the medical literature that was developing in the industrial hygiene area?

A. Yes.

Q. And I assume you did that with particular emphasis on silicosis?

A. Yes.

Q. And did you also do it with emphasis on asbestos?

A. On all possibly toxic materials that people in our plant might use.

Q. So would it be fair to say that during this period from '46 to the mid-50's, as part of your duties and your responsibilities, you were attempting to the best of your ability to keep abreast of all of the health and medical literature dealing with asbestos and its relation to health?

A. And other toxic products too.

Q. But at least for the purposes of this litigation, you were doing it with regard to asbestos?

A. Yes.

Q. And do you know whether Dr. Shook was also trying to keep abreast of the medical developments dealing with asbestos?

A. I don't know.

Q. Would you assume that he was, knowing Dr. Shook?

A. Yes.

Q. Now, in 1953 there was an agreement entered into between Owens-Illinois and Owens-Corning dealing with the distribution of Kaylo. Were you familiar with that generally?

A. Not very familiar, no, sir.

Q. Did you know that there was some type of distribution agreement between the two companies dealing with Kaylo?

A. Not at that time.

Q. When did you learn of it?

A. In later years.

Q. By later, you are talking about post-'70?

A. No, I mean towards the end of the 1950's.

Q. But at least in the early 1950's, '53, '4, '5, your recollection is that you did not know that Owens-Corning was distributing Kaylo for Owens-Illinois?

A. At that period, you are correct.

Q. By the way, was there some type of working agreement or relationship between you while you were employed by Owens-Illinois and personnel at Owens-Corning?

A. No. We didn't hobnob with those guys at all.

Q. Did they ever ask you for any help in connection with any industrial hygiene problems that they might be experiencing in their facilities?

A. Well, in years before this, they asked me to visit their plant where they made fiberglas which was

in Newark, Ohio, on more of a social visit than a working visit; but I did visit them and talked to their plant people. That's the only direct contact I can recall.

Q Did you ever do any dust counting, dust monitoring for Owens-Corning?

A No, sir.

Q Did anybody from Owens-Corning go along with you when you did dust monitoring at Owens-Illinois plants to see how you were doing it, to learn the procedures, or anything like that?

A I don't remember that anybody did.

Q Do you have any recollection prior to the time of the negotiations leading to the sale of the Kaylo Division to Owens-Corning discussing with anyone at Owens-Corning the Saranac study or any of the conclusions that Dr. Vorwald had reached?

A I don't remember that I did. Maybe someone else did.

Q Just dealing with you.

A No.

Q You have no recollection?

A No.

Q Now, you are familiar with the fact that the Kaylo Division was sold to Owens-Corning in May of 1958?

A Yes, sir.

Q And you knew about that during the time that the sale was being consummated and the transfer occurred?

A I don't remember when I knew it. 1958 stands out when the final thing was accomplished.

Q Did you at any time tell anybody from Owens-Corning about the Saranac study dealing with Kaylo?

A I don't remember.

Q Do you remember if there was someone who you would consider a counterpart at Owens-Corning, someone that you may have dealt with or discussed industrial hygiene problems at Owens-Corning?

A At what period?

Q During 1958.

A I don't remember that.

Q Did you maintain a file dealing with the Saranac study, the letters from Dr. Vorwald, and the reports?

A Yes.

Q And when the Kaylo Division was sold to Owens-Corning, what happened to your file?

A. The last day that they were part of Owens-Illinois we got some corrugated paper cartons, unloaded our file cabinet, called the janitor at the end of the afternoon, and had them carried over to Owens-Corning.

Q. Is this as a result of some instruction or memorandum or directive generally to transfer documents dealing with Kaylo to Owens-Corning?

A. I don't remember whether it was or not. I know we did that.

Q. You did do it?

A. Yes.

Q. And in addition to your files, were other files also turned over to Owens-Corning at that time?

MR. KELLEY: Object.

A. Yes.

Q. What other files were turned over to Owens-Corning that you know of?

A. I don't know what they were. I don't know what files went over. I know ours did.

Q. And that would include the documents that have been marked today?

A. I don't know whether all of those documents were in that file or not, but we sent over material

relating to the Saranac work.

Q. Would that have at least included the various reports, the interim and final reports, and Dr. Vorwald's transmittal letters?

MR. KELLEY: Object.

A. I know the Saranac reports went over. I don't know how much of the correspondence was in that file.

Q. And just so I am sure, Mr. Hazard, you have no recollection of talking to anyone at Owens-Corning about the Saranac study or calling specifically to the Owens-Corning people the information and the results that you had gotten from Dr. Vorwald?

A. I have no recollection of talking about it. It does come back to me that the reports went over so that there was no further need to discuss it.

Q. Just so I can break down the distinction between the oral and the written, you are saying that you are sure that the reports and the material in your file was put into this carton and taken over to Owens-Corning, right?

A. Yes.

Q. And as far as verbal communication, you have no recollection at this time that you yourself spoke

to anyone at Owens-Corning about the Saranac studies at the time of the transfer of the Kaylo Division to Owens-Corning?

A. I have no recollection of that.

62

Q. If I could ask you for a moment to look at Exhibits 19 and 20. This is the letter addressed to you from the Legal and Patent Department sending along two publications in September of 1941. You've had an opportunity to look at the letter, have you not, sir?

A. Yes.

Q. And Exhibit 20, the Public Health Service Report, is that the report that was referred to or one of the two reports that's referred to in the letter of September 8, 1941, from Owens-Corning returning two reports to you?

Let me rephrase the question. The letter, Exhibit 19, refers to a report that Mr. Ames asked to return to you entitled the Effects of the Inhalation of Asbestos Dust on the Lungs of Asbestos Workers. Do you see that, sir?

A. Yes.

Q. And Exhibit 20 is a document entitled Effect of the Inhalation of Asbestos Dust on the Lungs of the

Asbestos Worker?

A. Yes.

Q. Is Exhibit 21 one of the two reports that is referred to in Exhibit 19 as being returned to you?

A. Yes.

Q. Now, is this report the Lanza report on the effects of the inhalation of asbestos dust, a report that you required yourself because of your interest and desire to keep abreast of what was going on in the industrial health field with regard to asbestos?

A. Yes.

Q. And did you have any discussions with Mr. Ames in 1941, if you can recall, as to why he was asking you to provide him with copies of Exhibit 20 and the other publication that's referred to in the September 8th letter?

A. Why Mr. Staelin was returning this to me?

Q. Why Mr. Staelin was returning it or why Mr. Ames might have asked you to give him copies of the reports?

A. No, I don't know what prompted his request.

Q. Did you ever have any discussions with either Mr. Staelin or Mr. Ames or anyone else at Owens-Corning

in 1941 as to their interest in asbestos and health?

A. Mr. Staelin and Mr. Ames?

Q. Or anyone else at Owens-Corning?

A. I don't remember anyone in Owens-Corning. I think it's likely, probably, that I talked to Mr. Ames.

Q. Is he someone that at various times in the 40's and 50's, you would have dealt with at Owens-Corning?

A. Ames?

Q. Yes.

A. I don't think so. I don't think there was occasion to do it.

Q. Did you at any time in the early 1940's become aware of a campaign by Owens-Corning to invade the contracting market with their fiberglas products?

MR. KELLEY: Objection.

A. You are asking me?

Q. Yes.

A. No.

Q. At any point, Mr. Hazard, in the late 1940's or 1950's, did you become involved in any project to prepare a brochure dealing with the health aspects of Kaylo?

A. Not directly.

Q By that, you became involved in some way indirectly in such a project?

A I had knowledge that this was under discussion.

Q Would you tell us, sir, your understanding of what the nature of this project was, how it developed, and what it was supposed to do?

A I think it was for general distribution to anybody who was interested.

Q That included customers, contractors, shipyards, anyone who would use Kaylo?

A I think so.

Q And what led to this project to develop a brochure dealing with the health aspects of Kaylo?

A Well, the Saranac experiments were a pretty massive undertaking, and I think the persons in the Kaylo work at that time thought that they were worth publishing.

Q In addition to you, who else was involved in the Kaylo brochure project?

A I don't know.

Q Was Dr. Shook?

A I don't know. I think he might have been asked to review a draft, but I don't think he was

involved in organizing it.

Q Would you take a look at Exhibit 14, Mr. Hazard? The letter is signed by you, is that correct?

A Yes, it is.

Q By the way, I believe the copy of the letter that you have has some handwritten marks on the right side which are very poor to read?

A Yes.

Q By any chance, are you able to read them, tell us who wrote them, and what they say?

A I can't read them except the last two lines: "Within five years," I think it is, or within five men. It's men, not years.

Q The letter was written by you, was it not?

A Yes, sir.

Q And it indicates a copy to Dr. Shook?

A Yes.

Q Would that help refresh your recollection as to whether Dr. Shook was also involved in the brochure project?

A Well, as I said, I don't think he was directly involved in drawing it up, but I'm sure he would have been asked to review it.

Q The notes on the side, if I can go back to them for a minute, were they written by you?

A I don't know.

Q Was a brochure such as is discussed in the December 12, 1950, letter, was it ever prepared?

A I think a draft of it was prepared; but whatever happened to it, I don't know.

Q Was a brochure dealing with the health aspects of Kaylo ever circulated or made available to users of Kaylo?

A I don't know.

Q You don't know whether it was or it wasn't?

A I don't know whether it was or wasn't, yes.

Q At this time frame from 1946 to mid-1950's, the sale of the Kaylo Division to Owens-Corning, you were aware, were you not, that Kaylo was being sold to shipyards?

A Yes.

Q And it was being used in connection with the construction of new ships as well as in the repair of existing ships?

A Yes.

Q During the course of this ten year or so

period from your return until the time of the sale of the division, did you ever visit any shipyards?

A. I don't remember.

Q. Let me run through a list for you and see if you recall any of them.

A. I might say, there was a New York Shipyard in New Jersey and there is a Camden Shipyard, and I have been in those as a visitor unrelated to Kaylo, and I don't remember what the year was. It was like a sight-seeing trip.

Q. How about in Maine, Massachusetts?

A. No.

Q. Pennsylvania or Maryland?

A. No.

Q. None of those?

A. No.

Q. Did you ever visit any plants or construction sites where Kaylo was being used?

A. Not that I remember. You mean outdoor construction?

Q. Outdoor construction.

A. No.

Q. Did you ever visit any power plants or industrial

facilities where Kaylo was being used?

A. No.

Q. Do you have any recollection of at any time participating in any dust monitoring studies, dust collection studies, anything of that nature where Kaylo was being used to determine any of the properties of Kaylo?

A. I have a recollection of one plant but that was their own plant. It was not a customer's plant, and I don't remember being in any customer's plant.

Q. Just so I can eliminate everything, your best recollection then is that at no time did you visit any shipyard, any construction site, or any plant where Kaylo was being used for the purpose of determining anything about the dust release characteristics or the properties of Kaylo?

A. No.

Q. But you do have a recollection of, on one occasion, visiting one of Owens-Illinois' own plants where Kaylo was being used?

A. No, I misled you. I visited it several times, not just one time.

Q. And what was the purpose of the visits to

Owens-Illinois' own plants where Kaylo was being used?

A To see that the work environment was safe from a health standpoint.

Q Now, were you looking at the manufacturing end of Kaylo or how Kaylo was being used as a finished product?

A The manufacturing end of Kaylo.

Q How about the finished product aspect of it, did you ever as an industrial hygienist do any studies anywhere to determine what would happen when Kaylo was being used as a finished product to see how much dust was released or anything along those lines?

A In a customer's operation you mean?

Q You did do it?

A No. You mean in a customer's operation?

Q In operation, either yours or a customer's.

A Well, we studied our operation. It was not necessary to go into a customer's operation.

Q Just so you and I are together, I am talking not about the manufacturing end, but where a worker was putting the Kaylo up on a pipe or using the finished product for insulation purposes.

A No.

Q At any time did you participate in the preparation of any advertising material or any brochures or any product specification information that was disseminated to customers of Owens-Illinois that were using Kaylo?

A No, I don't remember doing anything like that.

Q You were never asked to review it or look at it to see if it was okay or passed review from an industrial hygiene point of view?

A No.

Q Did you ever make any suggestions or recommendations to your superiors at Owens-Illinois suggesting that a warning be put on Kaylo, a health warning?

A No, sir.

Q Did you ever make any recommendations or suggestions to anyone at Owens-Illinois suggesting that Kaylo be taken off the market because of its health aspects?

A No.

Q Did you ever in any way participate in any discussions at all dealing with the advisability of putting a warning on packages of Kaylo?

A No.

Q Did you at any time visit the Berlin or the Sayreville Plants and see the asbestos bags that were purchased by Owens-Illinois for use in the manufacture of Kaylo?

A Yes.

Q Did you ever see a warning on any of the bags of asbestos that were shipped to Owens-Illinois?

A I don't remember that I did.

Q By the way, you said at one point there was approximately 15 percent asbestos in Kaylo. What type of asbestos was it?

A It was chrysotile principally, I believe. Maybe a little amosite.

69

Q And do you know who the main supplier of the chrysotile asbestos was?

A No, I don't.

Q Or the amosite?

A No.

Q Did you have an industrial hygienist for Owens-Illinois, and limiting myself to the period prior to the sale of the Kaylo Division, did you have any discussions with any manufacturers of asbestos products concerning the health problems or health aspects of

asbestos?

A. No.

Q. And that would include Johns-Manville or UNARCO or any companies like that that dealt with asbestos products?

A. You mean discussions between me and Johns-Manville and me and UNARCO?

Q. Right.

A. No.

Q. Did you ever attend any meetings of any trade associations such as the Industrial Hygiene Foundation dealing with asbestos and health problems?

A. The term trade association, I think doesn't apply to the -- you mean Industrial Hygiene Foundation, Pittsburgh?

Q. Yes.

A. That's a technical organization, nothing to do with trade. But to get back to your question, did I have any discussions with them on asbestos?

Q. Dealing with asbestos and health.

A. I can't answer that because I attended lots of their annual meetings. As that goes, at some of those asbestos and asbestosis was discussed. It's just possible

that I did.

Q. Which associations did you attend?

A. Besides the Industrial Hygiene Foundation?

Q. Right.

A. National Safety Council annual meeting, the American Industrial Hygiene Association annual meeting, some meetings of the American Standards Association, and I guess those were the principal ones, some local section meetings also with some of those main groups.

Q. And if I understand what you have testified to, at different times these associations may have had discussions dealing with asbestos and health, but you really have no recollection at the present time one way or the other?

A. That's correct.

Q. How about with regard to the Industrial Hygiene Foundation, do you recall attending any meetings of the IHF at which asbestos and health were discussed?

A. I attended lots of annual meetings of IHF. I don't recall their papers on asbestos if they had them. I just don't recall that detail.

Q. Were you an individual member of IHF, or was

Owens-Illinois a corporate member?

A. Owens-Illinois was a corporate member. They don't have individual members.

Q. I assume as a corporate member, the company received the IHF digest?

A. Yes.

Q. Did you receive the IHF digest?

A. Yes.

Q. How about Dr. Shook?

A. I don't know. I doubt it.

Q. So it would have followed right into you directly?

A. Yes.

Q. And would you circulate it to anyone?

A. Yes.

Q. Who would you circulate copies to?

A. If it was something that Dr. Shook would be interested in, I would circulate it to him. They have abstracts on safety topics. If there was something that our corporate safety director might be interested in, I would circulate it to him. Anyone who might be involved in one of the subjects.

Q. You would go through each month's issue as it

comes in to see if there were abstracts of new publications dealing with the dusts that you were interested in?

A. Yes.

Q. That was one of the main contributions that the IHF digest served, was it not, to provide for an early dissemination of the abstracts of new medical studies?

A. Medical, engineering, chemical, toxicological, and safety to a limited extent.

MR. LEVY: It's 12:25. Do you want to stop or go forward? I don't want to push Mr. Hazard.

MR. CALLAHAN: How long do you intend to go at this point?

MR. LEVY: My guess is I have somewhere between a half an hour and 45 minutes the way things have been going.

MR. CALLAHAN: I would suggest we recess at this point.

MR. LEVY: Could I during the lunch break look at the documents that Mr. Hazard brought?

MR. CALLAHAN: Yes.

MR. LEVY: Shall we plan then about 1:30?

MR. CALLAHAN: That's agreeable.

(Whereupon, a recess was held from 12:25 to 1:30.)

MR. LEVY: If we're ready to begin. During the lunch break I have had an opportunity to review the material that Mr. Hazard produced in response to the subpoena. The documents were produced by Mr. Callahan in response to the individual items in the subpoena, and what I have told Mr. Callahan is that there are three items that I do intend to mark before the deposition is finished. One is the printed copy of the Schepers' report, second is the communications between Mr. Hazard and Owens-Illinois concerning the consulting agreement, and the third is the curriculum vitae.

As far as the other documents that were produced, I do not intend to mark them; although, I have asked Mr. Callahan to make

arrangements to have them copied for me, but not as a part of the deposition exhibits. Mr. Callahan also produced a box of note cards which contain notes for speeches that Mr. Hazard has given at various times. I have gone through them, and I don't intend to mark the box of cards or any individual cards unless something comes up during the course of the testimony this afternoon where I might want to refer to some.

Mr. Callahan has provided us with a book which contains most of the documents which have been marked as well as others that have been produced by various defendants and not marked. My understanding is they were essentially supplied by Owens-Illinois to Mr. Hazard, and I do not intend to mark the book. So if anybody feels differently, they can do what they want to, but that's the way I would go forward.

MR. KELLEY: Just for the record, even if the documents aren't marked, we would like copies of everything you refer to.

MR. LEVY: You mean all of the cards?

MR. KELLEY: No, not all the cards.

MR. LEVY: Anything that I am copying, you want a copy of?

MR. KELLEY: Right.

MR. LEVY: Maybe we should put it negatively. Is there anybody who doesn't want a copy of everything that's being copied for me? I guess everybody wants a copy.

BY MR. LEVY:

Q Mr. Hazard, going back to the Saranac study of Kaylo that we talked about this morning. In connection with your activities, did you at various times communicate with Dr. Vorwald and other people at Saranac concerning the Kaylo material that was being sent to them in connection with the study?

A I don't understand what you mean by "in connection with the Kaylo material."

Q The Saranac study was a study of Kaylo, was it not?

A Yes.

Q As distinguished from on the one hand raw asbestos and on the other hand calcium silicate?

A Yes.

Q So it was the finished product, so to speak?

A Yes.

Q And at various times did you have some communications with them in which you either had assured them that they were getting the finished Kaylo product for the studies?

A I don't know.

Q Let me show you another letter then that has not yet been marked, a document dated March 7, 1950, and I would ask the Reporter to mark it, please. It would be Exhibit 11D. That's a letter that you prepared and signed and sent to Mrs. Blinn at The Saranac Laboratory?

A Yes.

Q And if I could call your attention to the fourth paragraph, does that describe the procedure for selecting the Kaylo dust that was sent to Saranac for the study?

A Yes.

Q So essentially the dust came from the Berlin

Plant and it was dust that had been collected after the slabs of Kaylo had been planed and sawed?

A. Yes.

Q. In the documents that you produced for us today in response to the subpoena, there was a copy of an article by Dr. Schepers. Do you see that, sir?

A. Yes.

Q. And could you tell us, sir, whether you received a copy of Dr. Schepers' printed report some time in or around 1955 when it was published?

A. You mean this report?

Q. Yes.

A. I received a copy of the original journal that this was published in just routinely because I subscribed to it.

Q. Did you then make copies and distribute it to other people at Owens-Illinois?

A. I don't remember.

Q. But you did make your own copy?

A. You mean this one here?

Q. Yes.

A. I don't know. I don't think. Well, I just don't know. The reason I am hesitating, this type of

photocopy was not made, as I remember it, on the machine that we had. But maybe it was later, I don't know.

Q. There are some handwritten notes in the upper righthand corner. Were those made by you?

A. They look as though they were.

Q. Would you be able to indicate for us the time when you wrote those notes on the copy?

A. January 3, 1980.

Q. And prior to that, you did not write anything on the copy?

A. No, I don't think I did. Somebody else wrote this reference down at the bottom in longhand.

Q. Do you know who?

A. No.

MR. LEVY: Could we mark this copy as the next exhibit, please.

(Whereupon, Hazard Exhibit 21 was marked for identification.)

Q. Dr. Schepers who is the author of the published article which we have marked as Exhibit 21 was the head of The Saranac Laboratory?

A. Yes.

Q. And he had succeeded Dr. Vorwald?

A Yes, I believe so.

Q And the paper is a published report of the findings of The Saranac Laboratory in connection with the Kaylo study?

A Yes.

Q And even though it does not refer to Kaylo by name or to Owens-Illinois by name, it is dealing with the Kaylo study, is it not?

A Yes, it is.

Q Did you have any discussions with Dr. Schepers yourself before the article was published concerning the work that had been done by Dr. Gardner or by Dr. Vorwald in connection with the Kaylo study?

A The only discussion that I remember was that we were encouraging Dr. Schepers to publish this thing. There was a great delay into getting it into print.

Q And this was the result in part of wanting to get it published and Dr. Schepers finishing the job that Dr. Vorwald had started?

A In part that way. I think eventually without our encouragement they would have published it anyhow, but it was a long delay.

Q Now, you had mentioned earlier that you had

attended some of the Saranac Symposiums before you went into the Public Health Service in the 40's. Did you continue to attend the Saranac Symposiums afterwards?

A. Yes.

Q. And in particular, did you attend the seventh Saranac Symposium in 1952? That's the one at which Dr. Huper spoke in connection with industrial occupational health problems?

A. Well, I am not sure of that particular one. I do know that I attended most of them after the war years.

Q. Did you attend as a listener and observer, or did you attend as a speaker?

A. Listener and observer.

Q. To your knowledge, Mr. Hazard, were the minutes of the seventh symposium ever published?

A. I think they were. I think that the minutes of each symposium were published.

Q. Did you receive copies of them?

A. I think I did.

Q. And were they kept by you at Owens-Illinois?

A. Yes.

Q. Did you have them in your files when you

retired in 1974?

A. I don't remember.

Q. By the time you retired in 1974, had a medical library or an industrial hygiene library been set up?

A. At Owens-Illinois?

Q. At Owens-Illinois, right.

A. There were some volumes in that field that had been gathered through the years. Library is a pretty big word. I don't think it was very much of a library. It was a small collection of books.

Q. If you were going to try to give us an estimate of how many books, what would you put the range at?

A. That's a pretty hard question to answer. First of all, because I never counted the books, although they were catalogued; and second, because that's a good many years ago to recall what the shelf looked like.

Q. Well, would we be talking of something in the hundreds?

A. Not over a hundred, certainly.

Q. Were the minutes of the Saranac Symposiums put into the library?

A. Yes.

Q. Do you know, sir, whether Owens-Illinois

continues to maintain such a library?

A. No. I have been away seven years, and I haven't been back where these books were kept when I was there since, and I don't know where they're kept or how many are kept.

Q. We talked for a few minutes this morning about the Industrial Hygiene Foundation. Have you served as an officer of the Industrial Hygiene Foundation?

A. Not as an officer. In fact, they have a director. He's a member of the staff of the Industrial Foundation. They don't have officers in the sense of president, vice-president, treasurer, that sort of thing. It's run by the director who is a member of the staff of the Industrial Health Foundation.

Q. Have you held any position which would give you some say in how the organization is run; such as, being on the board of trustees if they had one, on the board of governors, or holding some position that would put you into the mainstream of the organization?

A. I was on the engineering committee, and Owens-Illinois was a member of the foundation, and I represented Owens-Illinois at some meetings with the trustees

of the foundation.

Q. Did Owens-Illinois always serve on the board of trustees of IHF going back at least to 1936?

A. Not always, I don't believe.

Q. They did go back?

A. In the early years which was about 1936, they were on the board of trustees.

Q. Did you know or is the name F. W. Sherwood familiar to you?

A. No.

Q. Do you remember Mr. Sherwood as being a vice-president of Owens-Illinois Glass in the 1930's?

A. It was Abbott W. Sherwood.

Q. Abbott?

A. Yes.

Q. Was he active in the Industrial Hygiene Foundation?

A. I think he was on the board of trustees in the early days.

Q. For a long period of time?

A. Not too long a time, a few years.

Q. How long?

A. Three or four years.

Q During the time that you served on the board of trustees or you attended board of trustee meetings of IHF, was Johns-Manville also a member of the board of trustees?

A I think they were. I think they were sponsors. I mean, co-sponsor of the foundation, I think.

Q How about Pittsburgh Corning?

A They may have been, but I'm not sure of them either.

Q Can you recall any other asbestos-manufacturing firms that were on the board of directors of the Industrial Hygiene Foundation?

A Pittsburgh Corning is not an asbestos supplier, are they?

Q We may argue that, but at times I would consider them an asbestos supplier.

A That's a new slant for me on them. No, I don't know whether they were members. I wouldn't say there were none. Chances are there were some.

Q Did you ever attend any meetings or conferences sponsored by the United States Government or the Maritime Commission which dealt with asbestos and health?

A. I don't remember.

Q. Did you ever participate in meetings which Owens-Corning sponsored dealing with shipyard safety?

A. I don't think so, but I don't remember fully.

Q. Your best recollection today is that you did not?

A. I did not, yes.

Q. I had also asked you this morning about contacts with other asbestos manufacturers. Did you have any dealings with Paige Woodard of Johns-Manville Corporation?

A. I don't remember that name. I remember Johns-Manville, of course, but not Paige Woodard.

Q. Or Charles Hite of Johns-Manville?

A. I don't remember him.

Q. Did you have any dealings with anyone from Pittsburgh Corning so as far as asbestos and health was concerned?

A. I don't believe I did. It seems to me -- well, I don't believe I did.

Q. Are you familiar with a visit by Dr. Shook to Johns-Manville and any discussion between Dr. Shook and representatives of Johns-Manville concerning the

packing and shipping of asbestos in the bag creating dust when the bags were opened?

A. I don't remember that.

Q. At any time in connection with your activities as industrial hygienist for Owens-Illinois, have you conducted any studies as to the effectiveness of respirators?

A. No, sir.

Q. Have you done any studies or reviews of medical literature concerning the effectiveness of respirators?

A. I wouldn't call it medical literature. I would call it industrial hygiene literature or engineering literature.

Q. To your knowledge, has Owens-Illinois ever conducted any studies of the effectiveness of respirators when used with regard to Kaylo?

A. No, we didn't have to.

Q. You did not?

A. No. We used only approved respirators approved by the U. S. Bureau of Mines.

Q. You never conducted any studies yourself to see whether the respirators were effective or whether

84

they kept the dust out or what type of protection they gave to the workers insofar as the activities of Owens-Illinois itself is concerned?

A No.

Q In connection with your work for Owens-Illinois, did you ever do any dust monitoring or dust studies of the Sayreville or Berlin Plants during the time that they were producing Kaylo for Owens-Illinois?

A Yes.

Q And is that something that fell within your general area of responsibility?

A Yes.

Q Now, did you select the places within the plant where the dust collections would be done?

A You mean the air samples?

Q The air sampling, right.

A Yes.

Q Was air sampling conducted at the storage or warehouse area where the raw materials came into the plants?

A Yes.

Q And was the air sampling also conducted at the point where the asbestos and the other material was

mixed into the slurries?

A. That would be in the same areas as the first one, if I understood the first one.

Q. Let me make sure you did. The first one really was designed to take the area where the bags of asbestos and raw material came in and were unloaded and stored until they actually went into the production process.

A. We did not do it there because the bags were not unwrapped until asbestos was going to be used in the mixing area.

Q. So there were none done at the entrance point, so to speak, where the raw materials were brought into the factory?

A. Not where they were all wrapped-up bags and tight.

Q. I assume you did it at various points along the production line?

A. Yes, that's right.

Q. And did you do it at the point where the Kaylo would be planed and smoothed?

A. Yes.

Q. And also where it would be cut into whatever

the proper lengths were?

A. Yes.

Q. Did you do it at the points where the Kaylo would be put into cartons in preparation for shipment?

A. I'm not sure, but I think we probably did at that point.

Q. And how about at the warehouse where the Kaylo was, the cartoned Kaylo was stored in anticipation of being loaded onto trucks or whatever else was being used to deliver it to the customers?

A. No.

Q. Were any studies or any dust samplings taken outside the plant; that is, ambient air samples outside the walls of the plant itself?

A. I don't remember.

Q. Is that something that you have done at other Owens-Illinois facilities subsequent to 1956?

A. In recent years when the subject of outdoor air pollution came up, we did take some outdoor samples. Back when we were making Kaylo, we didn't.

Q. If you were putting a time frame on when you first started doing outdoor air samplings, when would you put it?

A. I suppose about ten years ago.

Q. So roughly 1970, in that neighborhood?

A. Yeah.

Q. And what was the purpose of taking the outdoor air samplings?

A. To see whether we were generating any outdoor air pollution.

Q. And that would include monitoring to see whether the materials that were being used in your manufacturing processes were in the air in the vicinity of the plant?

A. Yes, sometimes.

Q. Now, I think you told me this morning that you did not do any air sampling at any customers' plants or shipyards?

A. Yes, that's true.

Q. Now, during the course of time when Owens-Illinois was manufacturing Kaylo, was there a program for x-rays of plant personnel?

A. Yes.

Q. Let me go back. I forgot to ask you a question. With regard to the air sampling at Berlin and Sayreville, when did that start?

A. Well, it started very recently after this Kaylo was in production in a matter of, oh, a couple of months or as soon as the production wrinkles got ironed out so they had a normal operation.

Q. The Berlin and Sayreville Plants were plants that had already been in existence, were they not?

A. Yes.

Q. They were then converted to the manufacture of Kaylo?

A. Yes.

Q. Prior to the Kaylo conversion, were dust samplings conducted at those plants, air samplings?

A. Not by us.

Q. So that your understanding is that after Kaylo went into production at the plants, Owens-Illinois began to do air samplings at Berlin and Sayreville?

A. That's my recollection. Now, if I might go back a minute. I got out of the Public Health Service in mid-1946. It seems to me that Berlin and probably Sayreville were already in more or less in pile plant operation at that time. So when I said that we sampled after those plants got in production, maybe two months they got in production, that's not quite

accurate because I was still in service when those plants started the operation.

Q Would it be fair to say that within a few months of your returning to Owens-Illinois, air samplings were being done at Berlin and Sayreville?

A I think that would be fair, yes.

Q And you just don't know whether they were being done before you returned?

A No.

Q If I go back to the question I had asked you about the x-raying, were you involved in the decision to conduct x-rays at the Berlin and Sayreville Plants?

A Of the employees?

Q Of the employees.

A Yes.

Q And were you involved in the decision as to which employees would be x-rayed and how frequently they would be x-rayed?

A The frequency was annually. We were involved in that. The areas in which the men worked was made by the medical director of the plant, physician, and the personnel director at the plant were involved as well as me to a limited extent.

Q Mr. Hazard, would you take a look at Exhibit H17 for a moment. It's a letter dated November 21, 1952. This is an intercompany memo that you prepared and signed, sir?

A Yes.

Q And who is Mr. P. A. Gillis?

A He was Personnel Director at the Berlin Plant.

Q And would you tell us, sir, what the purpose of this November 21, 1952, memo to Mr. Gillis was?

A This was a letter to Mr. Gillis who was the Personnel Director at Berlin and under whose direction the medical service operated. The purpose was to suggest a schedule for x-raying people in different areas of the plant.

Q And based on this suggested schedule, people who were actually involved in the handling of asbestos and in the mixing operation would be x-rayed annually?

A Yes.

Q And supervisory personnel would also be x-rayed annually?

A I don't see mention of supervisory personnel.

Q I was referring to the second page where you talk about plant managers should be x-rayed every year.

A. Yes, that's right.

Q. And the plant manager was not somebody who worked directly with asbestos or with the mixing and manufacturing process; would that be right, sir?

A. Not directly, but he at times was in departments where there might be loose asbestos fibers floating around.

Q. And in that case you would want him x-rayed annually?

A. Well, it was an up-and-down part of the job. He wasn't there a certain period every day. He would usually go out every day and walk through the production areas.

Q. Would it be fair to say that the plant manager was not somebody who was engaged eight hours a day, five days a week, 52 weeks a year in the mixing and the manufacturing of asbestos?

A. Oh, yes, that's fair. Another advantage or another thing to accomplish here was if the plant manager put on his respirator when he walked through the Production Department where everybody else was supposed to wear respirators, it was a good thing for morale and understanding.

Q Let me ask you one other question with regard to the plant manager and the x-ray. Would it be correct to say that when you sent this memo to Mr. Gillis in 1952 that you recognized that the type of exposure to asbestos the plant manager had could result in his developing asbestosis?

A No, we couldn't imagine he would get enough exposure to develop asbestosis.

Q At any time did Mr. Gillis put this schedule into effect?

A I don't know.

Q You don't recall following up to see if an annual x-ray procedure was in fact established at Berlin?

A I have every reason to believe it was, but I don't know. My memory isn't that vivid. I assume it was because he ran a pretty good ship.

Q Did you ever receive any reports from Mr. Gillis or see any reports prepared by him which would indicate to you that the x-ray system was in effect and what the results of the x-rays were dealing with the Kaylo operation at Berlin?

A A little bit more about the system. The chest

x-rays on the men were made locally and then the films were sent to Saranac Laboratory for interpretation. At the same time, the local roentgenologist examined and interpreted them too. The Saranac reports came back to us in Toledo. We noted them and forwarded them then to the plant. So we did know when these x-rays or if they were taken and what the results were.

Q. Based on what you say now, some system of annual x-rays did go into effect in Berlin?

A. I am sure, yes.

Q. And at Sayreville?

A. Yes.

Q. After the Kaylo Division was sold by Owens-Illinois, did you have any further responsibility or any further dealings with Kaylo?

A. No, not at a time when sale was complete.

Q. Were you ever called upon by Owens-Corning to provide any help or assistance to them with regard to their production and sale of Kaylo after 1959?

A. They have the access that they could ask us about the results of annual chest x-rays which they did to some extent as far as they were interested. Outside of that, we had nothing to do with it.

Q. Did Owens-Illinois at any time after 1959 manufacture any products which contained asbestos?

A. I don't know.

Q. You don't know one way or the other?

A. No. I have no reason to think that they did. We did have a research laboratory and experimental group and whether they were with us, I'm not sure.

Q. Do you have any recollection of any asbestos products being made by Owens-Illinois after the sale of the Kaylo Division for commercial sales?

A. No, I don't have any recollection of that.

Q. Mr. Hazard, in going through some of the cards of your old speech notes, is that the right term to use?

A. Well, talks.

Q. One theme seems to be that prevention is a very important factor, a very important part of industrial hygiene. Would that be a fair statement?

A. It's a very important part.

Q. When you talk about prevention, are you talking about prevention of occupational diseases?

A. Yes.

Q. And asbestosis would be considered an occupational

disease, would it not?

A. Yes.

Q. And asbestos would be considered more than just simply a nuisance dust; is that right, sir?

A. Yes.

Q. Just one last item, Mr. Hazard. Just so the record is clear, asbestosis is an industrial disease, is it not?

A. Yes.

Q. Asbestos is just the dust?

A. The cause of it.

Q. The cause of asbestosis, okay.

The last question, Mr. Hazard, is in going through the material you brought, there is an agreement or exchange of letters between you and Owens-Illinois. I wonder if we could mark those and if you could explain to us what your current status with regard to Owens-Illinois is.

Let me take it step by step. First, could we mark the package of material that you have in front of you?

(Whereupon, Hazard Exhibit 22 was marked for identification.)

Q Mr. Hazard, do you at the present time have some type of financial arrangement with Owens-Illinois?

A I am retained as a consultant to Owens-Illinois in this area of industrial hygiene and a rate of pay is mentioned in here.

Q Other than the work you have done with them in connection with the asbestos litigation, what other consulting services have you provided for Owens-Illinois during the term of this agreement that we have just marked?

A Well, there has been none where I was paid an hourly rate. They have asked my advice on this, that, and the other thing; but I have not been retained for any special job as the consultant.

Q Has most of your consultant activity under the term of this agreement been involved with asbestos litigation?

A Well, the Kaylo.

Q The Kaylo litigation?

A Right.

Q The other thing I have forgotten, there is a curriculum vitae and I would like to mark that.

A This consulting job is the same as other jobs

that I have had in the consulting field. It just happens that it's Owens-Illinois.

(Whereupon, Hazard Exhibit 23 was marked for identification.)

Q In regard to the curriculum vitae which has just been marked, is there anything sitting here today that should be added to it or changed, or is it complete as of this time?

A It looks complete to me. There may be an occasional article or paper that is more recent than this which may not be on there, but nothing strikes me at the moment.

MR. LEVY: I have no other questions. Thank you, Mr. Hazard.

MR. CALLAHAN: We have been in session for 55 minutes. I think this would be a good time for a break.

(Whereupon, a recess was held from 2:30 to 2:50.)

MR. ANDREW BERRY: Exhibit 2A, March 1943 Bowes to Gardner.

Exhibit 3A, June 25, 1943, Bowes to Gardner. Exhibit 3B, June 29, 1943, Gardner

to Bowes. 3C, July 6, 1943, Bowes to Gardner. Exhibit 3D, May 24, '44, Bowes to Gardner.

Exhibit 4A, attachment of May 31, 1944, to Exhibit 4. Exhibit 4B, undated report by Gardner. The first line of which is: "On February 2, 1943 we received..."

Exhibit 5A, Gardner to Bowes, November 27, 1944. Exhibit 5B, April 18, 1946, Bowes to Gardner. Exhibit 5C, May 13, 1946, Gardner to Bowes. Exhibit 5D, Summary of Animal Inhalation Experiments on Kaylo, May 13, 1946. 5E, telegram, Hazard to Bowditch, January 3, 1947. Exhibit 5F, Hazard to Bowditch, February 6, 1947. Exhibit 6B, Hazard to Vorwald, November 4, 1947. Exhibit 6C, Bowes to Vorwald, November 4, 1947. Exhibit 6D, Vorwald to Bowes, December 12, 1947. Exhibit 6E, Hazard to Vorwald, January 9, 1948. Exhibit 6F, Vorwald to Bowes, January 19, 1948. Exhibit 6G, Vorwald to Hazard, January 19, 1948. Exhibit 6H, Hazard to Vorwald, January 28, 1948. Exhibit 6I, Vorwald to Bowes, March 3, 1948. Exhibit 6J, Bowes to Vorwald, March

31, 1948. 6K, Vorwald to Bowes, April 26, 1948.

Exhibit 9A, Vorwald to Shuman, December 23, 1948.

Exhibit 10A, Vorwald to Bowes, May 3, 1949. Exhibit 10B, Bowes' secretary to Vorwald, May 9, 1949. Exhibit 10C, Hazard to Vorwald, July 6, 1949.

Exhibit 11A, Hazard to Vorwald, January 5, 1950. Exhibit 11B, Vorwald to Hazard, January 12, 1950. Exhibit 11C, Lillian Blinn to Hazard, February 24, 1950. Exhibit 11D, Hazard to Blinn, March 7, 1950. Exhibit 11E, Hazard to Vorwald, May 18, 1950. Exhibit 11F, Vorwald to Hazard, May 29, 1950.

Exhibit 14A, Vorwald to Hazard, December 18, 1950. Exhibit 14B, Hazard to Vorwald, April 30, 1951. Exhibit 14C, Industrial Hygiene Survey, May 29, 1951, of the Sayreville Plant conducted by Saranac. Exhibit 14D, Hazard to Vorwald, June 8, 1951. Exhibit 14E, Hazard to Durkan, July 11, 1951. Exhibit 14F, Durkan to Hazard, August 7, 1951. Exhibit

14G, Hazard to Miriam Sachs, November 5, 1951.

Exhibit 17A, Curtis Howard to George White, December 9, 1952, inclusive of draft pamphlet.

Exhibit 18A, Hazard to Ira Brought, July 12, 1957, including memo from Hazard of June 12, 1956 including memo of same day from Hazard to Stewart, and including reprint of what I think is Exhibit 21 which is the article by Schepers, Durkan, Delahant from the Archives of Industrial Health, September, 1955.

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EXAMINATION

BY MR. ANDREW BERRY:

Q Mr. Hazard, my name is Andrew Berry, and as you know, I am an attorney who represents Owens-Illinois. With the permission of these other gentlemen and lady at the table, I can go first in asking you some questions, which I will confine to the general subject matter of the questions that Mr. Levy asked you.

If you have any problems understanding my questions, because sometimes I talk too fast, let me know and I will try to rephrase them, okay?

A Okay.

Q Mr. Hazard, I show you what has been premarked as Exhibit 2A through 18A and ask you if you have had a chance to look at them prior to the time I have just handed them to you?

A Yes, I think I've seen these.

4
DB:jb

Q Mr. Hazard, as to those documents included in the Exhibits 2A through 18A which bear your signature or bear your initials, can you confirm that they originated from you in the ordinary course of business at Owens-Illinois at or about the dates reflected in them and were kept in the ordinary course of business by Owens-Illinois?

A Yes, sir.

Q As to the others of those documents, including those showing you as a recipient directly or as a carbon copy recipient, can you confirm that they were documents which were received and maintained by Owens-Illinois in the ordinary course of business as it existed in the '40's and the '50's?

A Yes, sir.

Q Can you confirm that the documents 2A through 18A were the sort of documents you have described in answer to Mr. Levy's question when you referred to pulling materials into boxes around April 30th or May 1st, 1958, and having them, I think you used the phrase, sent over to Owens-Corning Fiberglas?

MR. KELLY: Objection.

A Yes.

Q Let me ask that question another way. Do you

believe that those documents were sent to Owens-Corning Fiberglas in connection with the sale of the Kaylo Division?

MR. KELLY: Objection.

A. Yes.

Q. Mr. Hazard, Mr. Levy asked you on a couple of occasions, I think, whether Owens-Illinois put any warning on Kaylo, and I think you said that Owens-Illinois did not. Why not? Why didn't Owens-Illinois put a warning on?

A. The product was safe and the dust from the product was safe.

Q. And on what do you base that opinion?

A. Early in the days when Kaylo was being made, we worked with Saranac Laboratory for them to conduct animal inhalation experiments at Saranac Lake. Dust was gathered from a dust arrester at the Berlin Plant and was sent to Saranac where they dispersed it in a room which was lined with animal cages and where the animals breathed this dust. This dust being Kaylo dust.

They followed the animals for a matter of weeks and weeks. The daily exposure was eight hours

a day, five and a half days a week, week after week. Then at intervals when they assumed from their experience that the animals might have been affected by breathing the dust, they sacrificed groups of animals.

The first two experiments, first two series of experiments, were negative. The dust had no affect on the animals. The third series of experiments showed that the animals had contracted pulmonary asbestosis which was quite surprising, really, and at first somewhat of a concern.

However, it was concluded after succeeding experiments that there was no danger to the user of regular commercial Kaylo. The reason for this, the reasons were two. First, the exposure to the dust that the animals had was very, very high in actual figures in the order of 105, 110, 115 million particles, million asbestos fibers per cubic foot of air. The threshold limit value for man is only 5 million fibers per cubic foot of air. So the cloud was extraordinarily dense and the reason for this was to speed up the effect on the animals. As it is, each series ran for two or three years, but they gave

them big doses in order to speed up the effect.

Now, the second aspect was that the animals breathe dust five and a half days a week, eight hours a day, week after week during their lifetime. This is a very accelerated experiment. No man ever breathes Kaylo dust for his lifetime. It would be impossible.

So because of these two factors: One, the immense concentration that the animals were exposed to; and second, the fact that they were exposed for their lifetime made it unnecessary to label the product with some cautionary label.

In addition to this, it was published in the '40's a paper by Drinker and, what's his name, I forgot, it will come to me, published in the Journal of the American Industrial Hygiene Association where they examined shipyard insulation workers, men who installed pipe insulation on shipboard. They concluded that the occupation of insulation insulators was a safe one. The exposures that these men had were comparable, not the same, but comparable to what we had in our own manufacturing plant. We concluded that people handling Kaylo were also in a safe environment.

There were other things that were important in making this decision. The Kaylo plants at Berlin and Sayreville, New Jersey, had no Workmen's Compensation claims for any disease caused by breathing dust even after a good many years. They had no increased sick absenteeism in any way related to asbestos or Kaylo dust. The industrial hygiene people and doctors from the State of New Jersey Health Department found the insurance carrier, Workmen's Compensation insurance carrier from the Health Foundation, from Saranac Laboratory itself, and tests that we made at Owens-Illinois, showed that the dust exposure at Sayreville and Berlin was within safe limits, particularly as regards asbestos dust. So the conclusion was that this product was not harmful; hence, no reason to put a warning label on the carton.

Q Mr. Hazard, you referred earlier on in answers to Mr. Levy's questions to some time you spent at the Havard School of Public Health in the early 1930's. Who hired you?

A You mean there?

Q There.

A Philip Drinker, who was in charge of the

Industrial Hygiene Department of the School of Public Health hired me. Incidentally, you might be interested, this same Philip Drinker is the guy that the Drinker respirator, the iron lung was named after because he developed it.

This is aside from any dust consideration, but it might be of interest. He is a very ingenious man and he hired me because he had an idea for making a recorder to measure dust floating in the air. I had some physics background. This was to be a photo-electric device where you shine a beam of light through the film onto the photocells where the dust has been collected on the sheet of transparent film and it was supposed to operate automatically, set it up in the room and let it run for eight hours. Well, we built a couple of them. We got two patents on them. They were never commercially merchandised, but it was the most interesting experience, especially working under Phil Drinker, and for me because it got me away from physics and into industrial hygiene.

Q. Are you shown as the inventor on the patents that you just referred to?

A. Yes.

Q Is there a co-inventor?

A I'm not sure. Actually, there is.

Q Who?

A Drinker.

Q You mention that this device was for measuring airborne dust. In the early 1930's, what was, if you know, the conventional device for measuring airborne dust?

A The one used mostly in this country was called the Midget Impinger. It was a modification of an earlier impinger which was the Greenburg-Smith Impinger.

It was a flask such as this and there was a center tube that went down on the side along here and you sucked air out here, and dusty air returned down through the center of the tube, and dust was trapped in the distilled water. It was used widely. It was a tedious, painstaking way of measuring dust.

You had to take your dusty water back to the laboratory and count about ten specimens of it with a microscope. So that was the reason that Phil Drinker was angling to get a more automatic instrument in the shape of this thing that he hired me to work on.

There was a little different instrument used in Britain and South Africa and there were about three or four instruments used for measuring dust, all very tedious, not too accurate, and everybody wanted to get a quicker instrument.

Q Did the Midget Impinger continue to be used by you throughout the '40's and '50's?

A Yes, and today.

Q Was the Midget Impinger, or was not the Midget Impinger, the standard dust counting device for working hygienists in the '40's and '50's?

A It was the standard device certainly in this country. Abroad, they leaned a little bit towards other instruments, but it was still used there.

Q You indicated in answer to Mr. Levy's question that after you spent four years, I guess, at the Harvard School of Public Health including, I think you said, a year or 18 months with some teaching responsibilities, you became employed by Owens-Illinois. Can you tell us how you became to be employed by Owens-Illinois?

A The background?

Q Yes.

A Sure. In 1932, '33, '34 I got into it in '34, O-I had three sand plants to supply sand to auto plants for making the glass. These plants handled a hundred percent silicate sand, SIO2, and in the early '30's, they would be set by suits for Worker's Compensation claiming silicosis in the sand plant personnel. Eventually, those three sand plants were sold, and Owens-Illinois was practically out of the sand mining business to everyone's delight.

But some of the people at Owens-Illinois at that time, including one member of the Legal Department, began to wonder, we use all this sand in making bottles, if we have so much silicosis in the sand plants, how about the plants where it's used. So he heard of Phil Drinker and he went to the Harvard School of Public Health, said he wanted to hire somebody to measure dust in the bottle plants of which there were about nine or ten at that time scattered around the country. Well, almost a dozen scattered around the country. So Drinker suggested me, and I was hired by Owens-Illinois which is how I came to live in Toledo.

Q What was the principal business of Owens-

Illinois in the '30's and '40's and '50's?

A. Manufacture of glass containers which the normal person calls bottles; but the glassmaker calls them glass containers.

Q. After you began work at Owens-Illinois but before you went into the service in 1942, was there any existing work or health or industrial hygiene program at Owens-Illinois?

A. There was practically none at the time I got there which was '34. They did have a man who had done a little bit of dust measurement, but it was very minor.

Q. Aside from the dust measure aspect of it, when you came to work at Owens-Illinois, were there or were there not other programs dealing with industrial hygiene, worker health, and the like?

A. I guess there were because there are other ingredients besides sand that go into making glass, and particularly with colored glass, selenium and memogreen. There are other airborne contaminants outside of sand. Well, lead is one. Lead is really a far more fast acting material in the body than sand is so there were other aspects to the program.

Q During the course of your employment at Owens-Illinois, but prior to, let us say, 1942, did you become aware of the company's policies, programs, and attitudes with respect to worker health and safety?

A Yes, I did.

Q Could you characterize them for us?

A The company was a great believer in preventative health programs; that is, preventative sickness programs. Make the plant clean so a person doesn't get sick when he is working on a job. That was basic and that still is basic. This involves: How do you make it clean, how do you make the air clean. Well, you got to trap the dust somehow. You can do it through the use of water or through local exhaust ventilation or sometimes change the material itself. So they had a pretty broad interest.

Q Was there a medical program in existence prior to 1942?

A Each plant had its own local plant doctor, part-time doctor, mostly except for two instances. They did not have a corporate medical director when I got there. Later on, fairly soon, well, I guess in

'46 or something like that, they did hire a full-time medical director who coordinated the medical program.

Q. We will get back to that later. You used, in answer to one of my questions a little while ago, the phrase Threshold Limit Value or TLV. I forget which one you used. Can you explain what the concept is of that?

A. Yes, the concept is that there is a level of practically every material above which you should not have a person exposed for an indefinite period. By indefinite, in this term I mean the lifetime of occupational history. You can go above the TLV level as long as for a similar period you go below it for a similar degree. It's not something that you can never go above, but you got to even it out so that the average exposure is not above the Threshold Limit Value.

This was a new concept in the '40's, I guess. They always had these levels which were guides as to how much exposure a human being can accept, but the earlier one was the maximum allowable concentration, MAC. That concept was that you should never go above the maximum allowable concentration, but this was

changed to the TLV concept, which has been retained for many years now and is used today.

Q. Did the concept of the TLV have within it a safety margin?

A. Yes, there was a safety margin. A person could be exposed to the TLV for his working life and he would be safe. He would be below what the maximum his body would accept.

Q. Who promulgated the TLV's?

A. The governmental group which is known as the American Conference of Governmental Industrial Hygienists, abbreviated, ACGIH, issues these TLV's, updating them every year and having a group of proposed TLV's for a year or two until everybody has a chance to look at them and then they become the permanent TLV.

Q. Well, tell me, who comprised the ACGIH?

A. There is a conference, that's the name of it, a group of persons in industrial hygiene who hold governmental jobs. These people may be in the public health service from NIOSH, from any government agency where industrial hygiene is practiced, and it is practiced pretty widely in the U. S. Government. Also

state governments have industrial hygiene bureaus and those personnel or personnel in those bureaus are eligible to belong to the ACGIH. Professors and teachers and researchers can hold membership. Industrial people or people working in industry cannot; that is, I could, during the war years, but I could not before or after because I was not in a governmental agency.

Q. Did you have membership during the war years?

A. Yes, sir.

Q. Mr. Hazard, with respect to the TLV for asbestos which you had mentioned earlier, I think you referred to as asbestos particles, but tell us if you could, what the 5 million particles per cubic foot meant? I mean, how did that work?

A. Well, I mentioned the Midget Impinger which was this glass flask through the center hollow tube going down into it and a side arm in which you draw air so the air retaining the dust went down in the center tube and bubbled around in here and dust was wetted and retained by the distilled water, and then you took this to the laboratory and with a pipette took a small portion of it and put it in a flask,

which is like a blood counting chamber, that sort of thing, where you have a known thickness of water and you look at it through a microscope. The microscope having a field piece in it which is ruled with cross lines so you can define a given known area, and then you count those in that area. You know the area that you count in, you know the thickness of the water the particles were in, you know the volume of air you have drawn through. You can calculate back to the concentration of particles per cubic foot of air. Usually in millions, 5 million, for example, asbestos TLV currently. You don't count 5 million, you count maybe 30, 40, 50 particles in each of the ten fields in the microscope and then you take the median of those and multiply, divide, volume of air pulled through and so on.

Q Not being an industrial hygienist I may be somewhat confused. When you said asbestos particles, was the 5 million standard applicable to total dust, some of which might be asbestos particles, or was it applicable to other asbestos particles?

A It was applicable to the asbestos particles. In the early days of asbestos, they counted practically

all acid insoluble particles.

Asbestos is characterized as being a fiber shaped thing, but when fibers are broken, little particles can fall off so you do get particles of asbestos of a particle shape, not a fiber shape. However, several years ago now, they came to modify that and today they are supposed to count only fiber shaped particles and forget the round or square particles.

Q Well, let's go back to say, the '40's and the '50's. Could you give us your understanding of whether the TLV standard was applicable to the total dust, some of which would be comprised of asbestos or whether it was applicable to asbestos particles?

A Well, the current thinking is that it is applicable only to asbestos particles, not to total dust.

Q You told Mr. Levy that you took dust counts in the Berlin and Sayreville Plants. How would you reach a decision as to whether the Threshold Limit Value was being exceeded in the plant?

A Well, you go through this counting procedure

that I just described and you know what the Threshold Limit Value is, and what you don't want to exceed, and you compare what your dust sample is with the TLV.

Q When did you do that in Berlin and Sayreville? Was it your practice in the '40's and '50's to take in the percentage of Kaylo which was comprised of asbestos?

A Yes.

Q How did that work?

A Through collecting settled dust samples from rafters or ledges, that sort of thing. You could get dust that had been airborne which means that it was a very fine size, fine enough to be inhaled into the lungs, and this could be analyzed by x-ray technicians to find out the percentage of asbestos in this settled dust sample. You apply that percentage to the count that you made. If you made a total count, you applied it to that total count.

Q Can you give me a numerical example of how that might work? Suppose you had a 10 million particle dust count in Berlin or Sayreville?

A You mean what it would look like?

Q My question is unclear. Forget it. This method of counting total dust and then figuring out how much dust was asbestos particles, was that a method of using the TLV? Was it or was it not a method of using the TLV which was usual and customary in the '40's and '50's?

A It was usual and customary and you had to do it in that way or some equivalent way because you are not interested in total dust. You want to know how much asbestos your guy is breathing in.

Q During the time period that Owens-Illinois manufactured Kaylo, was the TLV regularly reviewed by the ACGIH?

A Yes, every year, once a year. After the Review Committee had decided to change the level it was put on this temporary listing for a couple years, and then it was moved over which gave people a chance to consider it and argue about it and so on.

Q During the time that Owens-Illinois manufactured and sold Kaylo, did the Threshold Limit Value for asbestos remain 5 million asbestos particles per cubic foot?

A Yes.

Q Was the ACGIH standard adopted by any governmental or political bodies or subdivisions?

A Yes. In this country every group that dealt with such things as Threshold Limit Values.

Q Was it adopted in the State of New Jersey?

A Yes.

Q Were you aware during the late '40's and 1950's of any other standard besides the ACGIH promulgated standard which was widely used?

A Which was widely used?

Q Yes.

A Some states have standards that were a little bit different from the ACGIH special limit value. If I remember, the State of Massachusetts had slight variations from the ACGIH. The same was true for some of the older states who had been in this game for a good many years.

Q You told Mr. Levy that during the second world war you served in the United States Public Health Service, and that it was militarized. Did that mean you held a military rank when you were working there?

A Yes.

Q What rank was that?

A I went in as a Captain. We wore uniforms like Army uniforms, and then they bumped me up to a Major.

Q I think you told Mr. Levy that among your duties during the war was consideration of dust, fumes, gases at various manufacturing plants in New Jersey and then in New York. In carrying out those duties, what standards did you apply with respect to dusts, if any?

A We used the TLV standard, and prior to that, before they were widely accepted, we used the MAC, Maximum Allowable Concentration Values.

Q In answer to my second or third question, I think, Mr. Hazard, you made reference to an article that was written by Phil Drinker with reference to shipyard workers and insulation. In the 1940's, were you a subscriber to the Journal of Industrial Hygiene and Toxicology?

MR. LEVY: Object to the question.

Q In any event, Mr. Hazard, in the '40's, did you subscribe to the Journal of Industrial Hygiene

and Toxicology?

A. Yes.

Q. In 1946, did you read an article by Fleischer, Viles, Gade and Drinker in that journal, and is that the article you referred to?

A. That's the article, yes.

Q. Do you remember reading that article in 1946?

A. Yes.

Q. How do you remember that you read it in 1946?

A. As I already mentioned, Drinker was the one who gave me my job at the School of Public Health, and I knew him personally. His office was just down the hall from me, and when you know a person that well and have such respect for him, you are pretty darn right you are going to read the article that he writes.

Q. After the war you returned to Owens-Illinois?

A. Yes.

Q. And I think you have discussed with Mr. Levy at some length the various correspondence back and forth with respect to the Saranac animal dust inhalation experiments. Did you ever request publication of the results of these Saranac studies?

A. Yes, we did. You mean the experiments with Kaylo?

Q. Yes.

A. Yes, we did.

Q. Did you, as you received the documents which have been marked as Exhibits today from Saranac to you and others at Owens-Illinois, did you compare or contrast the reaction of the sacrifice guinea pigs and other laboratory animals after exposure to Kaylo with the reaction of similar animals after exposure to other kinds of asbestos containing products or to asbestos?

A. I did not personally, but those at the Saranac Laboratory did and we took their word for it.

Q. Based upon the entire volume of the correspondence and documents flowing back and forth from Saranac and Owens-Illinois, what did you conclude as to whether or not Kaylo proved a risk to users?

A. We concluded we were in agreement with the people at Saranac Laboratory that the animals who breathed Kaylo dust for a long period of time did get a characteristic reaction of the tissue of asbestosis. Now, you might think, well, this is a

dangerous product. It's not a dangerous product. There was no need to label it as such. The reason for this, as I said, was the concentrations to which these animals were exposed were extremely high, 110, 125 million particles per cubic foot where the leval for man is 5 million. So it was far higher than what any man would breathe. He would just run for cover. He just wouldn't stay in that kind of dust. Or run for fresh air, I should say.

Plus the fact that this was for an animal's lifetime that the animal breathed this concentration eight hours a day. No man who is an insulator is going to spend his entire working lifetime laying up asbestos. He's going to be doing other things part of the day too. Fleischer and Drinker did not find that that was a dangerous occupation. Or put another way, they thought that insulators on shipboard were in a safe occupation.

Q Mr. Hazard, at Berlin and Sayreville, is it correct that the manufacturing processes continuously generated dust?

A No, the big source of our dust from uncombined materials was in the batch house where the

asbestos, soda ash, lime, were weighed out and put in a mixer and stirred up with the water. That was an intermittent product of the process.

The batch house at those two plants, as I remember, might have operated four or five hours a day if that, and the rest of the time was shut down. When this slurry, this batch, got into the kiln and heated, then the water is driven off and the chemical reaction is there so it came out as a cake type of thing or a slab or as a piece of cylinder, and then the dust was not a problem. You could handle it and it was all right. You didn't get a big cloud of dust out of it. It was all bonded together. If you sawed it or planed it, then you did have some dust released.

But the basic material, the slab, or the rod contained about only 15 percent asbestos. It was not hard even in sawing or planing it to exhaust dust from this so it was a perfectly safe operation.

Q When you took dust counts at Berlin and Sayreville, what standard, if any, did you apply?

A The TLV.

Q You indicated in answer to Mr. Levy's questions that some other people from time to time

had taken dust counts at Sayreville, and I think you indicated, that Saranac Laboratory had done a dust study?

A Saranac Laboratory did it, the State Health Department did it, our Workmen's Compensation insurance carrier did it, and those were the ones.

Q What standards did they use in determining the air quality within the plant?

A They used TLV. The same TLV, 5 million.

Q In answer to Mr. Levy's questions, you indicated that there was a periodic x-ray program at Sayreville and Berlin and that the chest x-rays which would be taken of the workers who had been working there were sent up to be read at Saranac?

A That's right.

Q And I think you told Mr. Levy they would then be sent through you?

A That's right.

Q During the time when Owens-Illinois manufactured and sold Kaylo, did you receive any indication from Saranac Laboratories that there were any x-ray changes in any of the x-rays they read which were suggestive of asbestosis?

A. No. My memory isn't too good on this; but it seems to me that they looked at over a thousand chest x-rays over a period of many years, and they found three that had some evidence that inhalation of dust had had an effect on the lungs, but it was not confirmed that this was asbestos dust. It could have been silicate dust. The picture, the markings were faint.

Q. Were you ever advised by Saranac Laboratories that any of the workers in the Berlin or Sayreville Plants had in fact contracted asbestosis?

A. No. I think I might throw out this thought. What's that have to do with the user? Well, we thought that there would be a bigger dust exposure in our Sayreville and Berlin Plants, just by the nature of handling Kaylo all the time, 24 hours a day, a bigger exposure than what the worker in the field would have. We had no hazard. Why would we tell the user in the field that this was a dangerous product.

Q. In the ordinary course of the operation of Owens-Illinois in the 1940's and 1950's would complaints from users of products produced by Owens-Illinois

which were health related complaints have made their way to you in the ordinary course of business?

A. A health related complaint of a dust source would certainly have. Now, we got complaints, you know, of bottle breakage which is a totally different thing and they did not come through me.

Q. Did you ever get any complaints during the 1940's and 1950's from any users of Kaylo about Kaylo dust?

A. No.

Q. During the time that Owens-Illinois manufactured and sold Kaylo, were you ever advised by Saranac Laboratories or by any other reputable personnel that the TLV's were unreliable?

A. No.

Q. Were you during that time period ever advised by Saranac Laboratories or any other person you considered to be reputable that shipyard workers or users of Kaylo were at risk?

A. No. Fleischer and Drinker's report brought that thought, if ever existed, to rest because they found that insulators were in a safe occupation.

Q. Did Saranac ever advise you to take dust

studies in shipyards or in construction yards or other places where Kaylo was used?

A. No.

Q. Did Saranac or anybody else for that matter ever suggest to you that you should put a warning label on Kaylo?

A. No. If I might add a point, this was the reason that we welcomed the visit of Saranac and technical people to our Sayreville Plant is that they could see how it was made. This is how Kaylo was made and we already mentioned they did make such a visit. They took dust counts in the plant at each important operation and they considered it a safe operation.

160

Q. Mr. Hazard, you indicated in 1958 that the Kaylo Division was sold to Owens-Corning Fiberglas?

A. Yes.

Q. Mr. Hazard, other than the putting in boxes of documents that you have already testified to today for what you indicated you believe was transmittal to Owens-Corning Fiberglas, so as far as you know, Owens-Illinois did not, and I exclude for the moment, the 1955 article on the Kaylo experiments at Saranac,

Owens-Illinois did not transmit the Saranac dust studies or related documents to any other company; did they?

A. No, they did not.

MR. KELLEY: Objection.

Q. Did Owens-Illinois other than in the boxing, and you understood transfer, of documents to Owens-Corning Fiberglas, transmit the Saranac correspondence and reports which Owens-Illinois had received to any other company?

MR. KELLEY: Objection.

A. No.

Q. Tell me all of the places, if you can remember, where the Saranac animal dust studies and related correspondence went, if anywhere, in 1958?

MR. KELLEY: Objection.

Q. You can answer.

A. 1958? The year it was sold you mean? We usually had, as I recall, about three copies of each report. Of course, it came through me. I showed them to Mr. Bowes if he was around, to the head of the Kaylo Division, to Charlie Shook, the Medical Director; and then sent one to the plant where it was

kept. I can't be too precise on this because I'm not sure where each copy did go, but in general that was the pattern.

MR. KELLEY: I move to strike the answer as speculative and unresponsive.

MR. ANDREW BERRY: I think that's all I have, Mr. Hazard.

A. Might I add one thing more? We wanted Saranac to publish the results of their animal experiments. Well, finally they did do it. So it's public knowledge. There is no secret about it.

MR. ANDREW BERRY: That's all I have. Thank you, Mr. Hazard.

(Whereupon, a recess was held from 3:55 to 4:15 o'clock p.m.)

MR. McMONAGLE: Tim McMonagle on behalf of Fibreboard's Counsel in Boston, Massachusetts, which is Sloan & Walsh represented by Robert Gilden, G-i-l-d-e-n. On behalf of those cases only involving Fibreboard, we would object to the terminating of this deposition at this time and would like to reserve our rights to recall Mr.

Hazard. I have spoken to Mr. Callahan, his Counsel, that I was going to put this on the record.

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EXAMINATION

BY MR. KELLEY:

Q Mr. Hazard, my name is John P. Kelley and I'm the attorney for Owens-Corning Fiberglas Corporation. I just have a few short questions for you. At least I hope that will be the case. First of all, you testified concerning transfer of documents to Owens-Corning. You don't know of your personal knowledge -- you didn't physically witness that transfer, did you, sir?

A No, sir. I know they were put in the cartons and that's as far as I know because it was 4:30 and I went home.

Q In other words, your knowledge of the facts here is simply that you saw all the documents put in the cartons?

A That's correct.

Q And beyond that you know nothing else; is that correct, sir?

A That's correct.

Q Also, you testified concerning Mr. Edward Ames and possible dealings with him in 1941. Do you recollect that testimony this morning?

A You remember what I said about him?

Q Well, you said that it was likely and probable, and they are the words you used, that you may have discussed the return of the government document with reference to the inhalation of asbestos with Mr. Edward Ames. Do you remember the testimony in that regard, sir?

A Yes.

Q You have no present recollection as to whether you had any discussion with Mr. Ames; isn't that correct, sir?

A That is correct.

Q You cannot recall specifically today discussing anything with him; is that correct, sir?

A That's correct. I am not surprised if I did. Somebody might say I did. I'm not surprised at that, but I personally am not sure.

Q You don't remember anything about it, if in fact it ever did happen?

A. That's right.

Q. Is that right?

A. Yes.

Q. We just wanted to clear that up in the record on behalf of those points.

Now, I had a couple of documents I want you to look at. First of all, would someone hand the Witness Exhibit 17A. Now, this, sir, if I can refresh your memory, this is a covering letter and also contains the proposed pamphlet with reference to handling Kaylo product. Will you take a look at that and tell me whether that's a correct statement I made?

A. Yes, that's correct.

Q. And you participated in the preparation of this pamphlet, did you not, sir?

A. Yes.

Q. And do you concur with what's stated therein, sir?

A. In the pamphlet?

Q. That's right.

A. I haven't read it for quite a while.

Q. Well, take time to read it now. In fact, I

know we're under strain to get this questioning over today. I will direct your attention to Page 4, the general conclusion wherein it states: "Experience in the factories and field and research findings have proven that normal handling of Kaylo products is safe from a health standpoint. The usual precautionary measure taken for any product containing asbestos are needed in a continued exposure to heavily concentrated Kaylo dust." Do you understand that conclusion, sir?

A Yes.

Q Is that in accord with your thinking on this subject?

A Yes, it is.

Q I want to direct your attention to Exhibit 18A. Is that merely your initials on a covering memo concerning this pamphlet or concerning a letter to Ira Brought?

A I beg your pardon?

Q Exhibit 18A which consists of a memo signed by you and also a letter of June 12th, looks like 1956, to Mr. Ira Brought.

A Yes.

Q. First of all, take a look at these documents and tell us whether you in fact prepared these.

MR. ANDREW BERRY: By the documents, Mr. Kelley, you mean the first two pages of Exhibit 18A?

MR. KELLEY: Yes.

A. Yes.

Q. And they represent your position on this matter, sir, your view of the Kaylo product?

A. The one to Mr. Stewart I read. I haven't read all of this first page. The one to Mr. Stewart is satisfactory.

MR. ANDREW BERRY: In the interest of time, would you like to direct the witness' attention to any specific paragraph on the first page?

MR. KELLEY: No, I would like him to read the whole letter.

A. Yes, okay.

Q. Does that represent your position, sir, the letter to Mr. Ira Brought?

A. Yes.

Q. I want to show you a document that hasn't

been marked.

(Whereupon, Hazard Exhibit 24 was marked for identification.)

Q I would like to show you Exhibit 24 and it's on the paper of Owens-Illinois Glass Company. It's a research paper with reference to hydrous calcium silicates and direct your specific attention to Page 22, the second paragraph, which concerns itself with other properties of Kaylo, and ask you to read this into the record and then state whether that in fact represents your position in this matter. Have you ever seen that paper before, sir?

A I don't remember.

Q Have you read the second paragraph on Page 22?

A Yes, sir.

Q Do you concur with that paragraph, sir?

A Yes.

Q Would you read it into the record?

A "The dust of Kaylo consists of a hydrous calcium silicate and asbestos and the hazards of such dust to health have been investigated by the Trudeau Laboratories at Saranac Lake, New Jersey. The hydrous

calcium silicate is harmless, and the asbestos manifested the usual effect of this mineral. The actual hazard to health of those handling Kaylo was considered to be small."

MR. KELIEY: Thank you. No further questions.

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FURTHER EXAMINATION

BY MR. LEVY:

Q. Mr. Hazard, as long as you have Exhibit 24 in front of you, that's the one that was just marked. Did you have anything to do with the preparation of it?

A. I don't remember.

Q. Had you ever seen it before today?

A. I don't remember that either.

Q. It was not in the pile of material that Owens-Illinois provided to you?

A. No.

Q. The portion that Mr. Kelley had you read into the record, I think you read that the asbestos manifested the usual effect of this mineral. Do you remember that sir?

A. Yes.

Q. And what is your understanding of the usual effect of this mineral?

A. Are you on the first sentence?

Q. No, I was on the second paragraph. You read a sentence: "The hydrous calcium silicate is harmless, and the asbestos manifested the usual effect of this mineral."

A. Yes.

Q. What is your understanding of the usual effect of this mineral?

A. Well, I take this mineral to mean asbestos?

Q. Right.

A. And I take the effects of asbestos to usually be a thickening of the lung tissue impairing the transfer of oxygen to the blood causing shortness of breath.

Q. Essentially, for shorthand, what is referred to as asbestosis?

A. Yes.

Q. Do you understand that the usual effect of this mineral also includes bronchogenic carcinoma?

A. No, I do not.

Q Do you understand that it includes gastrointestinal cancers?

A No, sir.

Q Or various other forms of cancer?

A No, I do not.

Q So your understanding is that the usual effects of asbestosis as used in this document refers to asbestosis and the symptoms and physiological changes which occur from asbestos inhalation?

A Yes. Let me get one point here. I am talking about the era when we had Kaylo and made it. I am not talking about recent years.

Q Well, has your understanding about the usual effect of asbestos exposure changed in the last few years then?

A Yes.

Q To the point where you do now recognize bronchogenic cancer as an effect of asbestos exposure?

A I recognize it as a current effect, currently known effect.

Q And do you recognize at the present time that other cancers also are a result of asbestos exposure and inhalation?

A. I know less about that, but I have heard of them.

Q. Now, as an industrial hygienist, you were familiar, were you not, in the 1940's with the concept of a latentcy period?

A. Latentcy in what respect?

Q. Between an exposure to a disease and the manifestation of that disease?

A. Yes.

Q. That was a concept which was known and accepted in the industrial hygiene and industrial medicine areas, is it not?

A. Yes.

Q. And by that you understood at that time that there were diseases where a person might be exposed and there would be a substantial period of time between the exposure to the substance or the mineral or the chemical and the time that the disease would manifest itself?

A. Let me clarify that just a minute. I recognized at that time that in the case of exposure to asbestos and the case of exposure to free silicate, the disease does not develop quickly. There is a considerable period of time, a matter of years, oftentimes,

before the development of the disease. However, if you take the guy out of the exposure, oftentimes the disease never develops.

Q But just in terms of the development of the disease, you did recognize and you did understand the concept of a latentcy period between exposure and manifestation of the illness?

A I question the word latentcy period. It's a continued exposure before the disease develops.

Q Would you feel more comfortable then that there was a period of time that elapsed between the commencement of the exposure to the substance or the mineral or the chemical and the time when the disease manifests itself?

A Yes, I like that better.

Q And you understood, did you not, that such a latentcy period did exist with regard to asbestosis?

A Well, that time of exposure that you just recounted, yes.

Q You knew that in the 1940's and 1950's, did you not?

A Yes.

Q And you knew that as a result of reading the

medical literature dealing with asbestosis that you've mentioned to us?

A. Yes.

Q. And did you understand at that time that the exposure period or this period from the commencement of the exposure to the manifestation of the disease with regard to asbestos could be many years?

A. Well, usually several years.

Q. Had you read any of the reports indicating a period of ten years or more between the commencement of the exposure and the manifestation of the disease with regard to asbestosis?

A. Ten years. I wouldn't go many more years than that.

Q. Today you recognize that the latentcy or the exposure period could be much greater than ten years; is that right?

A. What do you mean by today?

Q. Well, sitting here today.

A. You mean in the light of present knowledge?

Q. In the light of present understanding as distinguished from what you may have known in the 1940's and 1950's.

A. Yes.

Q. And it could be 20 years or more; is that right, sir?

A. I think that's stretching it.

Q. You think that's stretching it. Where would you cut off the period before the manifestation of asbestosis would develop?

A. Six to ten years.

Q. And that's based on today's knowledge?

A. No, based on knowledge that we had then.

Q. Well, let me go back because I want to be sure we're together. Your understanding in the 1940's and the 1950's was that there might be a six to ten year period between commencement of the exposure and the manifestation of the disease; is that right?

A. Yes, with continued exposure from the commencement to the manifestation, yes.

Q. But today your understanding is that period can be much greater than ten years; is that right?

A. It's my impression. Well, I don't want to get into this cancer thing, that may be what you have in the back of your mind.

Q. No, I'm talking just about asbestosis, not cancer.

A No, I think our feeling today is the same as it was in this period.

Q Have you continued to keep abreast of the medical literature in the last ten years since you retired from Owens-Illinois?

A Well, I retired seven years ago. I have kept abreast. When I first retired I kept very actively abreast, and as the years went by, my interest sort of tapered off a little bit so I am probably not keeping as abreast today as I was when I retired.

Q By the way, back in the '40's and '50's, were you also familiar in the industrial hygiene and industrial medicine area with the concept of a dose-response relationship?

A Yes.

Q And could you explain for us what your understanding at that point in time was of a dose-response relationship?

A I'm sure that I learned it in that period of time, but the dose is the amount of the insulting material that you are exposed to, and the amount of it and the length of time that you are exposed to it.

Q In a sense, the greater the exposure, the

shorter period of time that might be necessary to bring about the physiological change?

A. Yes.

Q. And concurrently or conversely, the lesser the exposure the longer it might take for the same type of physiological change to develop and appear?

A. Yes.

Q. Now, when you were reviewing the literature in the 1940's and 1950's, did you review or read any of the medical reports showing cases of cancer, bronchogenic cancer, developing among asbestos workers?

A. I don't remember them.

Q. Have you ever seen any cases indicating that?

A. I never seen any cases.

Q. Have you ever seen any studies?

A. Recently?

Q. Recently being what, the last how many years?

A. Ten years.

Q. You mentioned at one point this afternoon the concept of TLV or Threshold Limit Value. Do you remember that?

A. Yes.

Q. And is it correct, sir, that the Threshold

Limit Value that you talked about did not apply and did not contemplate cancer?

A. Yes.

Q. It only applied or was directed toward the possibility or the hope that if it were met that asbestosis might be averted?

A. That was the concept in the period that we're talking about.

Q. And you mentioned, and certainly it did not apply with mesothelioma?

A. No.

Q. Now, you mentioned the ACGIH. That is not a governmental body, is it?

A. It's made up of government employees.

Q. But it is not a governmental body with the capability of --

A. Under the U.S. Constitution?

Q. It is not a body that has an authority to promulgate standards on behalf of the Federal Government or any State Government; is that right?

A. That's right.

Q. Now, I think you've agreed with me earlier that the disease of asbestosis has been known for

some period of time prior to Owens-Illinois beginning work on Kaylo?

A. Yes.

Q. And you do know, don't you, sir, that asbestosis was recognized as a compensable disease in many states throughout the United States prior to 1940?

A. Yes.

Q. Including Ohio?

A. I don't know.

Q. But in any event, recognized in many states?

A. Yes.

Q. Now, you talked about the report by Fleischer dealing with the shipyard. Do you remember that, sir?

A. Yes.

Q. Did you give any consideration to the period of exposure of the people who were studied by Fleischer in that report?

A. They gave some data on that point which I don't remember at the moment. I mean, that was case data.

Q. Were you aware, sir, of the people studied only a very few, I think about three, had exposures

of greater than 10 years?

A. Three?

Q. Yes. Let me rephrase the question since Mr. Rubin tells me my numbers are wrong and I don't want to have the wrong numbers. Were you aware that there were very few people who were studied that had exposure of over 20 years?

A. Yes.

Q. And were you aware that there were a large number who had exposures of 10 years or less?

A. Yes.

Q. Were you aware, sir, that of the people who were studied and for which information was provided, that the people over 20 years had a very high percentage of asbestosis found?

A. Three cases.

Q. Percentagewise, that was a very high percentage, wasn't it, sir?

A. Well, I don't know offhand. I would have to look it up. What do you mean by high?

Q. High.

A. Yeah.

Q. Enough that you as an industrial hygienist

for a company like Owens-Illinois would have been concerned if those figures represented findings with regard to your own employees.

A. Those cases represented exposures of a wide variety, not all of them on shipboard.

Q. Did you recognize at the time you read the Fleischer-Drinker report that there was a significant finding of asbestosis among people with longer latentcy periods than among those with shorter periods of exposure?

A. Yes, that's what we've been talking about.

Q. And you understood that when you read the Fleischer-Drinker report that that's what the report showed?

A. Yes, it was brought up by the report.

Q. Now, you talked about the Saranac study, and in a little detail this afternoon also. Owens-Illinois financed the Saranac study, did it not?

A. Yes.

Q. And financed it continuously for a substantial period of time beginning 1943 and continuing until the final report in 1952?

A. Yes.

Q And did Owens-Illinois consider that to be a significant research effort?

A Very definitely.

Q And being conducted by a research laboratory that you had a great deal of confidence and respect in?

A Yes.

Q And did you have a great deal of confidence and respect in Dr. Vorwald?

A Well, yes and no. I had more confidence and respect in Dr. Gardner than I had in Dr. Vorwald.

Q But you continued to finance the study after Dr. Gardner died?

A I don't mean I mistrusted Dr. Vorwald, but I thought that Dr. Gardner had greater experience.

Q You said you read the correspondence and you did read the exchange of letters from Dr. Gardner in which he mentioned that asbestos in Kaylo gave him some concern because of the dangerous characteristics of asbestos?

A Yes.

Q And you knew that he recognized at the very beginning of the study that asbestos was dangerous,

harmful to health, and it created a potential problem for Kaylo?

A Well, no. I knew that he knew that asbestos could be dangerous and we knew that too. That's why we went to him.

Q In the March 12th letter, 1943, Exhibit H3, Dr. Gardner said, "The fact that you are starting with a mixture of quartz and asbestos would certainly suggest that you have all the ingredients for a first class hazard."

A Yes.

Q That clearly suggested, didn't it, that Dr. Gardner recognized and was telling Owens-Illinois in 1943 that by using asbestos in their product they had the potential for a first class health hazard; did it not?

A Not exactly. We knew what he was talking about already. We knew it had silica in it. We knew it had asbestos in it.

Q You recognized that either of those or both presented significant health hazards to users of the product?

A No, we didn't.

Q You didn't recognize in 1943 that silica presented a significant health hazard?

A We thought it might. We didn't know it would.

Q How about asbestos?

A Same with that. We thought it might. We didn't know it would.

Q And Dr. Gardner was pointing out that very problem for you?

A Yeah, it wasn't new.

Q Now, Owens-Illinois knew, did it not, during the time it was financing the Saranac Kaylo study that these were animal studies that were being done; did they not?

A We knew that.

Q And you continued to finance the studies knowing that they were animal studies?

A Yes, sir.

Q Because you were assuming that you would be able to obtain from the animal studies data which would be helpful to you in terms of pointing out whether there were health hazards involved with Kaylo products?

A Yes.

Q And you recognized, did you not, during the

study that one of the things that is done with animal studies is that the animals are usually subjected to extreme concentrations of the product which is being tested?

A Yes, in the case of material like silica and asbestos.

Q But the purpose of an animal study essentially is to concentrate and shorten the time span?

A I think you are generalizing there. Some exposure to some substances, exposure period, doesn't have to be shortened very much. The reaction is very immediate, but not in the case of asbestos and silica.

Q In the case of Kaylo, wasn't the purpose of animal studies to get a reading and to find out what would happen when animals were subjected to high concentrations of Kaylo dust in a relatively concentrated period of time?

A Over a lifetime.

Q Over a lifetime of the animal?

A Yes.

Q And the expectation is that the information would then be translatable into what would likely happen to humans who were exposed to the product?

A. It would be a guide.

Q. And you expected it to be a guide when you financed the study, didn't you?

A. Yes.

Q. And you knew that the high concentrations were being used of the Kaylo dust and you knew that it was being used over a relatively short period of time, the life of the animal?

A. It was a relatively long period of time if it's a lifetime.

Q. All right. Now, when you got the results of this study, it came in over a period of time; is that right?

A. Yes.

Q. And the first 18 months, I think you referred to it as the first and second study; but really you are talking about the reports coming in over a period of time, aren't you?

A. I'm not sure about that point.

Q. The reason I mention it is because I want to be clear that there are not different studies. There is really one Kaylo study that we're talking about?

A. I thought there were different studies.

Q. All right. Let's work on your assumption then. You understood that at the beginning the animals were sacrificed after a relatively short period of time?

A. Yes.

Q. And as a result of the sacrifice over a short period of time no symptoms, no pathological changes of any significance were shown?

A. I see what you mean.

Q. But as the period of exposure expanded or extended from 18 months to 30 months that you began to show or the study began to show significant pathological changes in the animals?

A. Yes.

Q. And this was in fact, wasn't it, Mr. Hazard, exactly what happened with the latentcy concept?

A. Well, there was more involved here than just latentcy.

Q. Well, don't you have the situation?

A. There was tremendous exposure.

Q. There was no difference in the amount of exposure that the animals were subjected to in the

first 18 months compared to what they were subjected to in the second 12 months of the 30 month period?

A. I see what you mean. Yes.

Q. It was consistent for those animals over the entire 30 month period; isn't that right?

A. Well, if you sacrificed two bunches from the original bunch, you have lost those and you don't know this consistency thing.

Q. No one knows what would happen if that animal had not been sacrificed?

A. Right.

Q. But the purpose of sacrificing some at 12 months, some at 18 months, and some at 30 months was to see how the animals which were similar would be affected by an increased exposure in terms of time; isn't that right?

A. Yes.

Q. And the result of increase in time was reported to you by Dr. Vorwald to show that as the exposure increased from 18 months to 30 months, significant changes, adverse pathological changes, occurred in the animals?

A. Yes.

Q And that is comparable, is it not, Mr. Hazard, to what would happen to a person who is working in an environment, whether it be a plant or a shipyard, who works three years and five years and then seven years? You would have the same increase in the amount of dust to which that person had been exposed as the duration of the time continues; is that correct?

A It could be comparable.

Q So therefore, what you learned from the Saranac study, if you learned nothing else, was that the increase in the duration of exposure tended to bring out in the animals that there would be pathological changes with the increase in the period of exposure?

A Yes.

Q And that information was transmittable and translatable into the human experience, wasn't it?

A No.

Q All right. When you received Dr. Vorwald's letter in 1948 in which he first advised you of what had happened to the animals after 30 months, he expressed, didn't he, his concern? If you refer to Exhibit 9 again, the November 16, 1948, letter,

Dr. Vorwald was telling you at that point in time, wasn't he, that the increase in the duration of time that the animals had been exposed to Kaylo brought about the significant changes in the pathology of the animals?

A. What page are you on?

Q. I'm right on the first page in the third paragraph.

A. What was your question?

Q. My question is: In this letter Dr. Vorwald was pointing out to you, to Owens-Illinois, that the extending of the duration to which the animals had been exposed brought about the development of asbestosis in the animals?

A. Yes.

Q. In fact, he even says that in all of the animals sacrificed asbestosis was found, doesn't it?

A. Yes.

Q. And he was telling you at that point, wasn't he, that this was a problem that you, Owens-Illinois, had to consider because of the health implications of the animals studied?

MR. KELLEY: Objection.

A. Yes.

Q. Now, you also said at one point this afternoon that you had no reports of Workmen's Compensation claims, I think you said, being filed in the early 1950's with regard to Kaylo; is that right?

A. Yes.

Q. And I think you also indicated to me earlier that the production of Kaylo began on a small basis, either a test or a small commercial basis in the early '40 period before you got back and that after that it began on a commercial basis; is that about the right time frame?

A. I think that is. I'm not sure just when it began on a commercial basis, but that was about the sequence.

Q. Would it be correct to say that when you were working on the brochure that you were asked about this afternoon that you really, Owens-Illinois really, had less than 10 years of manufacturing exposure to Kaylo?

A. Ten years I would say any way.

Q. And similarly people out in the field who were using Kaylo had less than ten years of exposure

to Kaylo?

A. Yes.

Q. Now, you also said earlier that shipyard workers work in confined spaces. Do you remember that?

A. Yes.

Q. And you said at one point that the plant, I think, managed to stay pretty close within the TLV, whether it was the 5 million particle standard or whatever standard was in effect?

A. Yes.

Q. And based on your activities in the plant, you were trying to maintain the best possible environment in the plant, weren't you?

A. The most needed environment.

Q. You were putting in local exhaust and ventilation and things like that?

A. Yes.

Q. Trying to clean up the atmosphere in the plant?

A. Yes.

Q. Do you think you succeeded?

A. Yes.

Q. So in your opinion, the plant in your view,

was doing pretty well in terms of maintaining a good dust-free environment?

A. Yes.

Q. Now, you know that the workers aboard ships worked in confined areas, did you not?

A. Yes.

Q. And you know that you frequently had not only the people who were actually doing the pipefitting and the working with the asbestos products, but other trades were also working in the same confined area?

A. Yes.

Q. That was something that was known to you, wasn't it?

A. Yes.

Q. And do you have any idea as to what the comparable dust figures were with regard to your plant after you had been able to bring in all the environmental controls and dust equipment that you did?

A. In our plant the dust levels were below the TLV and the Drinker-Fleischer report gives their figures too so the figures are available.

Q. Have you ever spoken to any shipyard workers?

A. I don't know.

Q. Have you ever had the opportunity to have anyone tell you about what conditions were like in the confined spaces when they were insulating aboard a ship?

A. No.

Q. Have you ever had anybody tell you about not being able to see from one end of a compartment to another end of a compartment because the asbestos dust was so thick they couldn't see from one side to another?

MR. KELLEY: Objection.

A. No.

Q. You didn't know that when you drafted the brochure or reached your views about the health hazards involved in Kaylo, did you, sir?

A. We knew about the health hazards in Kaylo.

Q. What I am asking, you didn't know about the actual conditions aboard ships during installations and during rip outs, did you?

A. We knew what Drinker and Fleischer wrote.

Q. Did you know about the actual conditions?

MR. KELLEY: Objection.

MR. ANDREW BERRY: Objection.

A. Well, their figures were based on actual

conditions.

Q Did you ever go aboard any ships? Did Owens-Illinois ever send anybody aboard a ship and take a dust count in the areas where your products were being used?

A No.

Q You never made that effort to see whether what was happening aboard the ships to the people who were actually using Kaylo was comparable to what was happening in your plants, did you?

MR. KELLY: Objection.

A No, it was not necessary.

Q When you say it was not necessary, you mean that you didn't need that information?

A We had comparable information accumulated elsewhere.

Q You have mentioned only the Fleischer-Drinker study. What other comparable information did you have?

A Air samples that we made in our own plant where Kaylo was processed.

Q Did you ever go aboard a ship or did you ever see anything of the conditions aboard a ship

other than the Fleischer-Drinker report?

A. Well, I have been aboard a ship, yes.

Q. During insulation work?

A. Not during insulation work.

Q. Let me put the question to you, Mr. Hazard, so we can get it finished. Did you have any information other than the Fleischer-Drinker report as to what the conditions were aboard ship during insulation and during rip out of insulation?

MR. KELLEY: I'm going to object. This is repetitive. These questions were all asked just a minute and a half ago.

MR. LEVY: I think there is a little bit of ambiguity. That's all I am trying to clear up.

Q. Let me rephrase the question. Other than the Fleischer-Drinker report which you have mentioned, did you ever have any information based on the tests, based on personal experience of what the conditions were aboard a ship during the time when asbestos insulation was being applied or asbestos insulation was being ripped out?

A. No.

MR. LEVY: I have no other questions.

(Whereupon, the deposition was concluded at 5:05 o'clock p.m.)

WILLIS HAZARD

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C E R T I F I C A T E

STATE OF OHIO)
) SS.
COUNTY OF LUCAS)

I, Dianne Bochi, a Notary Public in and for the State of Ohio, duly commissioned and qualified, do hereby certify that the within-named witness, WILLIS HAZARD, was by me first duly sworn to tell the truth, the whole truth and nothing but the truth in the cause aforesaid; that the testimony then given by him was by me reduced to stenotype in the presence of said witness, afterwards transcribed upon a typewriter; and that the foregoing is a true and correct transcription of the testimony so given by him as aforesaid.

I do further certify that this deposition was

taken at the time and place in the foregoing caption specified and was completed without adjournment.

I do further certify that I am not a relative, counsel or attorney of any party, or otherwise interested in the event of this action.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal of office at Toledo, Ohio, on this 25th day of February, 1981.

DIANNE BOCHI,
Notary Public
in and for the State of Ohio.

My Commission expires February 25, 1982.

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